THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. VIII. OF VOL. II., 1944 — No. 6312. VOL. CCXLVII.

LONDON, SATURDAY, AUGUST 19, 1944

Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper.

Pp. 64—Price 1s.

Annual Subscription: Inland £1 2s. Abroad £1 10s.

★

A booklet, *Coramine, Stimulant of the Vital Centres*, will be sent on request to members of the Medical and Allied Professions. Samples are also available for clinical trial

★

Coramine

BRAND OF NIKETHAMIDE B.P.

STIMULANT OF THE VITAL CENTRES

on which the pioneer work was done and the thousands of published reports are entirely based

Large doses at the critical moment
Small doses for prolonged treatment

CORAMINE Liquid and Ampoules are made exclusively by CIBA

Ciba LIMITED — THE LABORATORIES, HORSHAM, SUSSEX. *Phone:* HORSHAM 1234. *Grams:* CIBALABS, HORSHAM.

OESOPHAGEAL OBSTRUCTION.
ITS PATHOLOGY, DIAGNOSIS AND TREATMENT
(including four chapters on Cancer of the Œsophagus).
By A. LAWRENCE ABEL, M.S. Lond., F.R.C.S. Eng.,
Senior Assistant Surgeon, Royal Cancer Hospital.
Pp. 245. 132 Illustrations. 2 Col. Plates. 30s. net.
"Masterful and complete. . . . Cannot be too highly praised."
—SURG. GYN. AND OBSTET. JOUR.
Oxford University Press, Amen House, London, E.C.4.

New volume in the Students' Aids Series

AIDS TO CLINICAL PATHOLOGY
By DAVID HALER, M.B., B.S. (Hons.), D.C.P. Price 6s.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2

In the Students' Aids Series

AIDS TO ORTHOPÆDIC SURGERY AND FRACTURES
By I. E. ZIEVE, F.R.C.S. Eng.
SECOND EDITION Price 6s.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2
SECOND EDITION IN PREPARATION.

DISEASES OF THE THYROID GLAND
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully illustrated. £3 3s. net.
Revista de Libros: "This book is the best clinical treatise which we possess to-day on the pathology of the thyroid. . . . The excellence of the text is generally enhanced by the illustrations."
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

THE CARE OF TUBERCULOSIS IN THE HOME
By JAMES MAXWELL, M.D., F.R.C.P.
Assistant Physician and Demonstrator of Practical Medicine, St. Bartholomew's Hospital; Physician, Royal Chest Hospital; Consulting Physician, Royal National Sanatorium, Bournemouth
Demy 8vo. 106 + xii Illustrations. 7s. 6d. net, plus postage.
Hodder & Stoughton, Ltd., 20, Warwick-square, London, E.C.4.

Free to the Medical Profession on request. Cloth bound Ed. 5s.

ARTIFICIAL LIMBS.
"SOLVITUR AMBULANDO"
A Symposium on Prosthetic Achievement.
Pp. 72. 37 Coloured Plates.
"I congratulate you on this interesting, instructive, and artistic production. I consider it to be a very great addition to my library."—M.B., Ch.B., F.R.C.S.
J. E. Hanger & Co., Ltd., 7, Roehampton House, Roehampton, S.W.15.

ABDOMINAL OPERATIONS
By RODNEY MAINGOT, F.R.C.S. Eng.
795 Figures on 298 Plates (23 in Colour).
1400 pages. 2 Vols. £5 5s.
D. Appleton-Century Company, 34, Bedford-street, London, W.C.2.

LANCET WAR PRIMER

WOUND INFECTION
Edited by W. H. OGILVIE
96 pp. 2s. 6d. net Plus 3d. postage
The Lancet Ltd., 7, Adam-street, Adelphi, W.C.2.

Third Edition. 7s. 6d. net + 4d. postage

PRINCIPLES OF MEDICAL STATISTICS
By A. BRADFORD HILL, D.Sc., Ph.D.
Demy 8vo. 189 + vii pages. 9 Graphs. 22 Tables.
"A notable success."—B.M.J.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

ENDOCRINE DISORDERS IN CHILDHOOD AND ADOLESCENCE
By H. S. LE MARQUAND, M.D. (Lond.), M.R.C.P. (Lond.), Physician, Royal Berkshire Hospital;
and F. H. W. TOZER, M.D. (Lond.), M.R.C.P. (Lond.), Sometime Clinical Assistant, Royal Berkshire Hospital
Demy 8vo 298 + x pages Illustrated 15s. plus postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4.

BRITISH PHARMACEUTICAL CODEX 1934

Upwards of 1000 monographs are included, covering the whole field of therapeutics. In addition to particulars regarding the source, the chemical and physical properties or botanical characters of the substance concerned, each monograph includes a section on action and uses compiled from the most authoritative information available. A separate formulary section contains formulæ for hundreds of preparations widely used in medicine, and the background of experience behind the B.P.C. formulæ is leading to a growing appreciation of their value among an ever-widening circle of medical men.

Supplements I to VI of the B.P.C., published at various intervals from 1940 to 1944, bring the matter up to date in respect of new substances and preparations and in respect of war-time requirements necessitated by short supplies of essential drugs.

Price: 40/- **Inclusive of Supplements I-VI, 50/- post free** *Remittances with orders*

THE PHARMACEUTICAL PRESS, 17, Bloomsbury Sq., London, W.C.1

The Standard Mercurial Diuretic

For intravenous or intramuscular injection —
Ampoules of Mersalyl B.D.H. (Injection of Mersalyl B.P.)

For oral administration —.
Tablets of Mersalyl B.D.H. (Mersalyl B.P., 0.08 grm., with theophylline 0.04 grm.)

For rectal administration —
Suppositories of Mersalyl B.D.H. (Mersalyl B.P., 0.4 grm., with theophylline 0.2 grm.)

In addition to its general use in early nephritis, nephroses, hepatic ascites and cardiac œdema, Mersalyl B.D.H. may be used also in the treatment of polyserositis, eclampsia (in the absence of acute pyelonephritis), Ménière's disease, obesity, thrombophlebitis and the œdema of toxic goitre.
It is probable that the diuretic potency of Mersalyl is inseparable from some degree of toxicity. Reactions are comparatively rare, however, and the beneficial effects of the use of Mersalyl are such that the few reactions reported are "*not an indication to withhold the drug but rather to use care in administering it.*" (Lancet, May 8th, 1943, p. 576).

Details of dosage and other relevant information will be gladly supplied on request.

THE BRITISH DRUG HOUSES LTD. LONDON. N.1

Mrsl/E/17

AUGUST 19, 1944

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6312 · LONDON: SATURDAY, AUGUST 19, 1944 · CCXLVII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

A Year of Military Medicine in India
Lieut.-Colonel A. W. D. LEISHMAN, MRCP, Major A. R. KELSALL, MRCP 231

Wounds of the Joints
Colonel H. FRUCHAUD, MD ... 235

Acridines in Septic Wounds: Use of 5-Aminoacridine
Group-Captain H. R. G. POATE, FRCS 238

The Talocalcanean Articulation
Prof. F. WOOD JONES, FRCS, FRS (*illus.*) 241

Air-Embolism in Criminal Abortion
DONALD TEARE, MRCP 242

Estimation of Thiouracil in Urine
A. B. ANDERSON, MRCS (*charts*) 242

The Orthopædic Anæsthetist
Squadron-Leader B. G. B. LUCAS, MRCS, Wing Commander I. A. G. L. DICK, FRCS 243

Primary Tuberculous Infection in Nurses: Manifestations and Prognosis
MARC DANIELS, MD (*concluded*) 244

RECONSTRUCTION

Two more Questionaries: Views on a National Health Service 258

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents 259

LEADING ARTICLES

WOUNDS OF JOINTS 247
RELIEF OF EUROPE 248
CONTACT WITH THE TUBERCLE BACILLUS 249

ANNOTATIONS

Penicillin for Civilians 251
Picric Acid and Burns 251
Nature and Nurture 252
Evacuation of London Hospitals 252

SPECIAL ARTICLES

The Wounded from Normandy: Evacuation and Distribution .. 253
Penicillin for Civilians: Distribution and Use 255
Medicine and the Law: "I certify that ..."—Successful Amateur.. 257
Unsuspected Tubercle: Assessment of Radiological Evidence 260

REVIEWS OF BOOKS

Atlas of Anatomy. Prof. J. C. Boileau Grant, FRCS 246
Health Education on the Industrial Front 246
Common Skin Diseases. A. C. Roxburgh, FRCP 246
Blood-pressure and its Disorders. John Plesch, MD 246
Controlled Parenthood. Reynold H. Boyd, FRCS 246
Operative Dental Surgery. J. B. Parfitt, MRCS, LDS; W. E. Herbert, MRCS, LDS 246

LETTERS TO THE EDITOR

Damage to Cervical Cord in Head Injuries (Prof. F. J. Nattrass, FRCP) 261
Awaiting Sanatorium Treatment (Dr. T. F. Jarman) 261
Part-time Specialism (Dr. N. P. Henderson) 261
Fixed Traction in a Thomas (Mr. J. S. Batchelor, FRCS, Major John Charnley, FRCS) 262
Doctors and Democracy (Mr. R. F. Phillips, FRCS) 263

ON ACTIVE SERVICE

Casualties—Award 264

OBITUARY

Colonel F. P. Mackie, FRCP 263
Walter Knowsley Sibley, MD 264

PUBLIC HEALTH

Scottish Health 260
Infectious Disease in England and Wales 260

NOTES AND NEWS

Voluntary Hospitals in a National Service 264
Tuberculosis and National Health Service 264

London School of Dental Surgery 252
Alvarenga Prize 252

Births, Marriages and Deaths ... 264

THE PRINCIPLES & PRACTICE OF CARDIOLOGY

By **CRIGHTON BRAMWELL**, M.D., F.R.C.P., and **JOHN T. KING**, M.D., F.A.C.P.

"Particularly welcome. . . . There is room for this book."—THE LANCET

"One of the really useful books which have been published since the outbreak of war."
—MEDICAL PRESS AND CIRCULAR

"Well written, authoritative, bound to appeal greatly."—CLINICAL JOURNAL

Pp. 520 230 Illustrations 35s. net

OXFORD UNIVERSITY PRESS

In the Press *Ready Shortly*

SURGERY

A Textbook for Students

By

CHARLES AUBREY PANNETT

B.Sc., M.D., F.R.C.S.

Professor of Surgery, University of London; Director of the Surgical Unit, St. Mary's Hospital, London; sometime member of the Court of Examiners R.C.S. Eng., and Examiner to the Universities of London, Manchester, and Cardiff

740 + xii Extensively illustrated throughout text

The book gives a short account of general surgery. Due to the careful selection of proved methods it is unencumbered by obsolete recommendations; nor is it burdened by discussions of controversial points in pathology or details of operative technique unnecessary for the undergraduate student. Yet always the indications are clearly stated. Whilst written primarily for the undergraduate, the information given is full enough to form a basis of knowledge for students of advanced surgery.

HODDER & STOUGHTON LTD.
20, Warwick Square, London, E.C.4

VEGETABLES FOR BABIES
—*ready strained*

CARROTS, SPINACH, PRUNES — *Picked at their prime; steam-cooked; vacuum-packed in glass bottles.*

ALSO BONE AND VEGETABLE BROTH

THE REASONS Brand's Baby Foods are superior to home-prepared vegetables :—

1. They are steam-cooked and packed *in vacuum*, which tends to conserve the vitamins. Full flavour and fresh colour retained.
2. They are so finely sieved that not a particle of irritant fibre remains.

The family doctor, who knows well the importance of an infant's first solid food, will have every confidence in recommending Baby Foods made by Brand & Co. Ltd. to the busy war-time mother.

BRAND'S BABY FOODS

7½d. a jar

PREPARED BY THE MAKERS OF BRAND'S ESSENCE

Demy 8vo 361 + vi Pages 33 Graphs 38 Tables

CONTROL OF COMMON FEVERS

By twenty-one contributors. Arranged by

Dr. ROBERT CRUICKSHANK and EDITOR OF THE LANCET

12/6 net + 6d. postage

THE LANCET LIMITED 7, ADAM STREET, ADELPHI, LONDON, W.C.2

40 YEARS' EXPERIENCE TEACHES THAT

LACTAGOL ENSURES BREAST FEEDING

Lactagol increases the flow of breast milk **Lactagol increases the nutritive qualities of the milk** **Lactagol increases the strength of both mother and child**

FREE *Samples for clinical trial post free on application to:* LACTAGOL LTD. MITCHAM, SURREY

Lactagol presents: Edestin (cotton-seed extract), Calcium, Phosphorus, Iron, etc.

AN APOLOGY

Owing to the increasing demand for Sulphanilamide Tulle (OPTREX BRAND) we much regret that there is some delay in filling orders. We are doing everything possible to improve the position, and to ensure that the supply of Sulphanilamide Tulle equals the demand.

SULPHANILAMIDE TULLE
(OPTREX BRAND)

A PRODUCT OF OPTREX LTD.

Chas. F. Thackray Ltd.
Sole Distributors

THE OLD MEDICAL SCHOOL, PARK ST., LEEDS
and 225 REGENT ST., LONDON, W.1

HYPERTENSION—

Control it with—
PANLITTOL

● The value of Armour's PANLITTOL Tablets in cases of hypertension has been clinically proved....PANLITTOL is a combination of the active extracts from the Pancreas and Thyroid, in dosages of 2 1/2 and 1/10 grains respectively.

Extensive clinical tests show that PANLITTOL's pancreatic content acts to normalize the defective carbohydrate metabolism usually found in hypertensive cases. The action of its thyroid content controls the body weight of the hypertensive patient, and reduces the likelihood of arteriosclerosis.

Panlittol Tablets do not contain any powerful vasodilator drugs. They are a thoroughly safe and effective means of lessening tension and of controlling the symptoms of high blood pressure.

SUPPLIED IN BOTTLES OF
24, 100 AND 500 TABLETS

Write for sample and descriptive brochure to:

THE Armour Laboratories
(ARMOUR AND COMPANY, LTD.)
THORNTON HOUSE · FINSBURY SQUARE · LONDON · E.C.2

Telephone - - KELvin 3661
Telegrams - - "ARMOSATA-PHONE" LONDON

The Digestibility of Milk in Infant Feeding

"Lacidac (half cream or skimmed) is one of the most easily digestible forms in which milk can be given; the acid taste is not resented after the first few feeds by most infants, who will take it readily if sugar is added. The skimmed form is one of the best methods on which to restart feeding after a short period of starvation in Summer Diarrhœa."
(Post Graduate Medical Journal, August 1933, page 311).

The normal hydrochloric acid content of the gastric juice of infants is low and rapidly disappears in illness or conditions of exhaustion. In these conditions not only is the gastric digestion incomplete or inactivated but the stimulus to digestive powers in the alimentary tract is lacking. Lactic acid milk in the form of Lacidac has now gained a recognised place in Infant Dietary. It is particularly suitable in prematurity, debility and hypothreptic conditions. Its tendency to produce constipation is of value in conditions — enteral or parenteral — where diarrhœa is present.

LACIDAC

LACTIC ACID MILK IN POWDER FORM

© 3032

ANALYSES	FULL CREAM		HALF CREAM		SEPARATED	
	Dry Food	Reconstituted Milk (1 in 8)	Dry Food	Reconstituted Milk (1 in 9)	Dry Food	Reconstituted Milk (1 in 10)
	%	%	%	%	%	%
Fat	26.5	3.3	16.0	1.8	0.7	0.1
Protein	25.5	3.2	29.0	3.2	34.0	3.4
Lactose	36.0	4.5	42.5	4.7	51.3	5.1
Mineral salts ...	6.0	0.7	6.5	0.7	7.5	0.7
Lactic acid ...	3.5	0.4	3.5	0.4	3.5	0.3
Moisture	2.5	87.9	2.5	89.2	3.0	90.4
	100.0	100.0	100.0	100.0	100.0	100.0
Calorific value per oz....	145	18.1	129	14.3	105	10.5
(per 100 grammes)	512	63.9	456	50.6	371	37.1
pH value		4.6		4.6		4.6

INDICATIONS:— Gastro-Intestinal disturbances, Whooping-cough, Pneumonia, Measles, Diarrhœa, Marasmus, Vomiting. Lacidac is made in three strengths, Full Cream, Half Cream and Separated.

A supply for clinical trial with descriptive literature will be sent free on request to

COW & GATE MEDICAL AND RESEARCH DEPT. L. GUILDFORD, SURREY

A COW & GATE PRODUCT

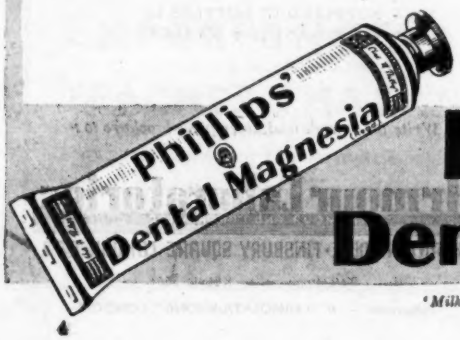
The Toothpaste with a Difference

Phillips' Dental Magnesia possesses the advantage in that it incorporates a high percentage of 'Milk of Magnesia', which has been employed for the past generation with success in controlling oral acidity and is recognised by the dental profession as an ideal antacid.

In recommending Phillips' Dental Magnesia to your patients you have the assurance that not only is it markedly efficient in keeping the teeth scrupulously clean but, in addition, its regular use definitely combats the pre-disposing cause of dental decay.

Phillips' Dental Magnesia is particularly indicated as the agent of choice in the treatment of morbid gum conditions. Its refreshing taste is appreciated by both young and old.

THE CHAS. H. PHILLIPS CHEMICAL CO. LTD.
179, Acton Vale, London, W.3



Phillips' Dental Magnesia (Regd.)

'Milk of Magnesia' is the Registered Trade Mark of Phillips' preparation of magnesia.

'SECONAL'

TRADE MARK BRAND

Sodium Propyl Methyl Carbinyl Allyl Barbiturate

One of the shortest acting barbiturates, 'Seconal' serves admirably to bring sound sleep without leaving after-effects of drowsiness next day. 'Seconal' also finds favour with obstetricians as a hypnotic during labour, and with surgeons as pre-anæsthetic medication.
'Seconal' is supplied in 3/4 and 1-1/2 grain 'Pulvules' brand Filled Capsules in packages of 40 and 500.

Eli Lilly and Company Limited
Basingstoke and London

1847 — 1944

TIME TESTED DEPENDABLE

CHLOROFORM
PURE.
DUNCAN
(EX ETHYLIC ALCOHOL)

DUNCAN, FLOCKHART & CO.,
EDINBURGH LONDON

GOLD THERAPY
in Rheumatoid Arthritis

". . . . the brilliant results that can be obtained, even in the most severe and chronic cases, will justify gold therapy in a disease that has proved refractory to so many other forms of treatment."

SOLGANAL B OLEOSUM is perhaps the most satisfactory form of gold medication on account of its maximum therapeutic efficiency and minimal toxicity.

It is presented in oily suspension for intramuscular injection—a form which permits of gradual absorption and obviates the unpleasant sequelæ so often a feature of chrysotherapy.

Full details gladly sent to interested Medical Practitioners on request

'Solganal B' is the registered name which distinguishes aurothioglucose of British Schering manufacture

BRITISH SCHERING LIMITED
185-190 HIGH HOLBORN · LONDON · W.C.1

BS

S17

ELIXIR VITAMINÆ

Made by a modern homogenising process, Elixir Vitaminæ contains Vitamins A and D, Glycerophosphates, Organic Iron and Calcium, together with traces of Copper and Manganese.

These valuable constituents are distributed with absolute uniformity in a deliciously flavoured syrup containing Glucose. In convalescence and debilitated conditions, particularly after illness or operations, Elixir Vitaminæ provides the vitamins and minerals necessary for a rapid recovery. Its pleasant flavour makes it of great value where the appetite is small and it is specially suitable for children.

Packed in 20-oz., 40-oz. and 90-oz. bottles.

one of HEWLETT'S preparations

C. J. HEWLETT & SON, LTD., MANUFACTURING CHEMISTS, LONDON, E.C.2.

6

PARENTERAL TREATMENT OF ANAEMIA

with

NEO-HEPATEX

Rapid remission of anaemia.

Each batch is clinically tested before issue.★

Non-toxic.

Suitable for intravenous use.

Painless on injection.

★ A copy of the clinical report is enclosed with each package.

Issued in

Boxes of Ampoules { 6 x 1 c.c. 50 x 2 c.c. / 50 x 1 c.c. 3 x 4 c.c. / 6 x 2 c.c. 50 x 4 c.c.

Rubber capped Bottles { 10 c.c. 25 c.c.

For further particulars apply to

Liverpool: Home Medical Department Speke, Liverpool, 19

London: Home Medical Department Bartholomew Close, E.C.1

MEDICAL EVANS PRODUCTS

Made in England by

EVANS SONS LESCHER & WEBB LTD. M40c

Anodyne influence through peripheral action

BENGUÉ'S BALSAM

When muscular aches and pains must be relieved, as in lumbago, chronic rheumatoid conditions and influenza, Bengué's Balsam provides effective salicylate medication free from the gastric upset which so often follows when salicylates are given orally.

Bengué's Balsam produces active local hyperemia of value in overcoming congestion as in cases of pleurisy and influenza, and clearing the tissues of accumulated toxic end-products of metabolism.

Bengué's Balsam exerts its analgesic action through its contained Menthol and Methyl Salicylate in lanolin, and thus offers a powerful medication whenever muscular and joint pains must be relieved.

MYALGIA

•

RHEUMATOID CONDITIONS

•

LUMBAGO

•

INFLUENZA

A generous free sample will be sent on request

BENGUÉ & CO. LTD., MOUNT PLEASANT, ALPERTON, WEMBLEY, MDX.

ALOCOL

AL-O-COL

Colloidal Hydroxide of Aluminium

Rational Antacid Therapy

APART from those cases due to actual organic disease, the treatment of the syndrome of symptoms known as indigestion generally resolves itself into an attempt to overcome hypersecretion of acid and to soothe the irritated or inflamed gastric mucosa.

That "Alocol" possesses intrinsic qualities which render it particularly valuable as a gastric sedative and antacid is now well established. Its freedom from the constipating effect of bismuth, the laxative action of magnesium salts and the gas-forming properties of sodium bicarbonate is especially noteworthy.

"Alocol" forms with the gastric contents a colloidal jelly which has the power of adsorbing free hydrochloric acid. Its markedly soothing effect on the gastric mucosa promptly relieves pain and discomfort. It does not interfere with the normal process of digestion and is free from the danger of "alkalosis."

Complete chemical history of "Alocol," with convincing clinical reports and supply for trial, sent free to physicians on request

A. WANDER LTD.
Manufacturing Chemists
KING'S LANGLEY, HERTFORDSHIRE

M256

ANTISEPTIC · RESOLVENT · BLAND

IODEX is vastly superior to Tr. Iodi in activity, and in antiseptic, resolvent, and inflammation-reducing properties, yet it can be applied *ad libitum* even to mucous surfaces. It is therefore ideal for external use wherever an *entirely bland* yet active iodine can be of service. The unique characteristics of Iodex give it a far wider field of usefulness than is possible with any ordinary form of this halogen.

Indicated in

INFLAMMATORY CONDITIONS
ENLARGED GLANDS, WOUNDS
NEURITIC PAINS, LUMBAGO
PAINFUL JOINTS, RINGWORM
AND OTHER SKIN AFFECTIONS

"There is no virtue in Iodex which is not inherent — though often latent — in Iodine; and there is no virtue in iodine which is not available — in an enhanced degree — in Iodex."

'IODEX'

IODINE OINTMENT

MENLEY & JAMES LTD. • 123 COLDHARBOUR LANE • LONDON • S.E.5

Yeast

The food value of yeast has been recognised for many years ; it supplies not only protein material but also the all-important B vitamins.

Owing to the exigencies of war yeast has recently come to the front as a useful weapon in the campaign against malnutrition.

Marmite is an autolysed extract of yeast prescribed extensively for its health-promoting properties.

MARMITE
YEAST EXTRACT

The Marmite Food Extract Co. Ltd., 35 Seething Lane, London, E.C.3

A resting state of the ovaries may be suspected in women who (a) fail to develop fully at puberty, or (b) regress physically after delivery. The ovaries can be grossly stimulated by injections of the equine gonadotrophin

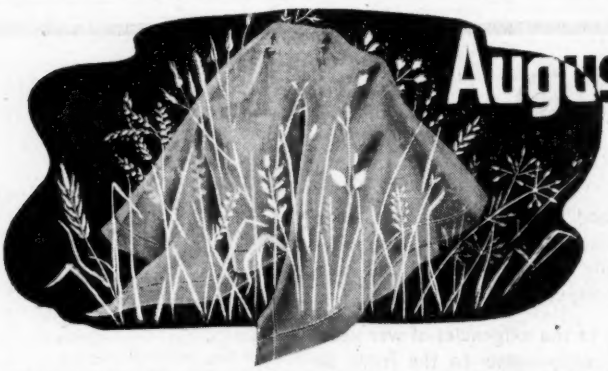
G E S T Y L

either by persistent intramuscular injection; at daily or short intervals of 400 i.u., or by single or divided intravenous injection, at cyclic intervals, of 400 to 1000 i.u.

Such stimulation, though not always followed by overt cyclic hæmorrhages, should be adequate to direct the physical trend toward normality.

ORGANON
BRETTENHAM HOUSE, LONDON, W.C.2.

TELEPHONE: TEMPLE BAR 8785 ● TELEGRAMS: MENFORMON, RAND, LONDON



August Hay Fever

The second Hay Crop in August generally produces considerable quantities of pollen. A recurrence of Hay Fever and Summer Colds usually takes place during this month.

Congestion of the nares and the consequent discomfort due to Hay Fever and Summer Colds can be immediately relieved by the timely use of 'Endrine.'

Prescribe 'Endrine' for your patients. They will be gratified by the comfort and free nasal ventilation that it provides.

'ENDRINE'

BRAND NASAL COMPOUND REGD

JOHN WYETH & BROTHER LTD.

Clifton House, Euston Road, LONDON, N.W.1

(Sole distributors for Petrolagar Laboratories Ltd.)

RESTRICTED SUPPLIES: Owing to the shortage of certain supplies and the consequent limitation of output, chemists have been asked to give priority to doctors' prescriptions. Veganin is not advertised to the public.

PAIN *IS INTENSELY PERSONAL*

Sympathetic understanding may assuage mental anguish, but surcease from physical distress can come only from the relief of symptomatic pain.

Veganin is particularly well adapted for the relief of menstrual distress since it is a synergistic association of codeine, acetylsalicylic acid and phenacetin producing rapid and prolonged relief without ill effects.

When it is necessary to relieve pain without incapacitating the patient, try Veganin.

VEGANIN

WILLIAM R. WARNER & CO. LTD., 150-158, KENSINGTON HIGH STREET, LONDON, W.8

(Wartime Address)

14

SULPHANILAMIDE POWDER
—BOOTS—

STERILIZED

A free-flowing crystalline powder in the most suitable form for implantation into wounds and application to surface lesions and burns.

Available in sterilized sifter envelopes ready for immediate use, and in bottles of 15 gm.

Carton containing 10 sifter packets of 5 gm. 5/4
Bottle of 15 gm. - - 1/3½

Prices net.

Further information gladly sent on request to the

MEDICAL DEPARTMENT
BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM

B956-201

Collosol Manganese
COLLOSOL MANGANESE
CROOKES' COLLOSOL MANGANESE
a thoroughly established therapeutic agent for the treatment of
BOILS · CARBUNCLES · ABSCESSES
CHRONIC ULCERS · GONORRHŒA
ACNE · PSORIASIS · ETC.
Its action is tonic and stimulating
THE CROOKES LABORATORIES (British Colloids Ltd.) PARK ROYAL, LONDON, N.W. 10

ST. MARY'S HOSPITAL
VACCINES
FOR RESPIRATORY AFFECTIONS

The ideal time for commencing prophylaxis against "colds" is during September. Three graduated doses, with an interval of from 7 to 10 days between each, are recommended. The vaccine especially designed for the purpose is "ANTI-CATARRH VACCINE," containing *M. catarrhalis*, with *Pneumococcus*, *B. pneumoniae*, *B. septus*, *B. Influenzae*, and *Streptococcus*.

For protection against influenza, it is recommended that INFLUENZA VIRUS VACCINE be used in conjunction with a bacterial vaccine (Anti-Influenza Vaccine, Mixed). A total of three doses given in September or October, supplemented by a further two doses in December or January, is the usual prophylactic course.

Further particulars of the above vaccines, which are prepared in the Department for Therapeutic Inoculation, St. Mary's Hospital, London, W., will be supplied on request.

PARKE · DAVIS & COMPANY

50, Beak St., London, W.1 : Inc. U.S.A., Liability Ltd. SOLE AGENTS

"Elastoplast" and dressings economy

"Elastoplast" is economical in use—please use it economically. As a dressing it protects the newly-formed granulations and should be left undisturbed as long as possible, provided no unusual pain is experienced.

Elastoplast Technique—*New Edition.*

Supplies of the tenth edition of "Elastoplast Technique" are limited, but there are sufficient for members of the medical profession who do not already possess a previous edition.

Please write to the Medical Department of the manufacturers, address below.

"Elastoplast" Bandages and Plasters are made in England by

T. J. Smith & Nephew Ltd., Hull.

A YEAR OF MILITARY MEDICINE IN INDIA

A. W. D. LEISHMAN
D M OXFD, M R C P
LIEUT.-COLONEL RAMC; OFFICER IN CHARGE OF A MEDICAL DIVISION

A. R. KELSALL
M B CAMB., M R C P
MAJOR RAMC
MEDICAL SPECIALIST

AN account by Bulmer (1943) of the medical cases treated in a large general hospital in the Middle East proved of great interest to us. It was clear that, though our work in India had much in common with that in the Middle East, we were faced with additional problems. It seemed to us therefore that a review of a year's work, from a hospital of similar size, might provide useful comparisons.

This large base hospital, situated in Western India, receives British troops and a small number of Indian and Anglo-Indian soldiers on the British strength. Most of the patients are local admissions, but convoys also come from other hospitals and occasionally from overseas. During the last 7 months, patients recommended for evacuation by medical boards throughout India have also been transferred here, and this has artificially raised the incidence of certain diseases, such as peptic ulcer and steatorrhœa.

TABLE I—DISTRIBUTION OF DISEASE GROUPS IN 11,645 CASES

		%			%
Tropical diseases	5998	(51·5)	Diseases of skeletal system	174	(1·5)
Respiratory diseases	1377	(11·8)	Genito-urinary diseases	110	(0·9)
Infectious diseases	1254	(10·8)	Diseases of blood and lymphatic system	77	(0·7)
Skin diseases	1242	(10·7)	Endocrine and metabolic diseases	35	(0·3)
Nervous diseases	519	(4·4)	Miscellaneous	208	(1·8)
Diseases of alimentary tract	446	(3·8)			
Cardiovascular diseases	205	(1·8)			

Most prevalent diseases

Malaria	2819	Diarrhœa	509
"Short fever"	1134	Amœbic dysentery	501
Infective hepatitis	992	Bronchitis, acute and chronic	457
Bacillary dysentery	772	Tonsillitis	450

Our review covers the twelve months August, 1942, to August, 1943, during which 11,645 patients were admitted to the medical division. Table I shows the group incidence of disease. Though our proportion of tropical diseases was slightly higher than Bulmer's figure (45%), it may surprise readers at home to see that this group comprises little more than half the total. They are classified in table II.

TABLE II—TROPICAL DISEASES (5998 CASES)

Malaria	2819	Effects of heat	49
Dysentery group	1836	Tropical typhus	42
Short fevers	1134	Tropical eosinophilia	7
Sprue and steatorrhœa	52	Leprosy	4
Helminthic infestation—(tapeworm 35, hookworm 6, roundworm 4, cysticercosis 3, threadworm 2, strongyloides 1)	51	Avitaminosis	3
		Kala-azar	1

Malaria

Although the hospital is in an area of relatively low malarial endemicity, this disease has been easily the commonest cause of admission to hospital. Fortunately it has rarely been of severe type (table III).

TABLE III—MALARIA (2819 CASES)

Benign tertian (BT) (primary 54%, relapse 46%)	2010	Quartan	12
		Mixed	51
Malignant tertian (MT) (primary 70%, relapse 30%)	595	Clinical	151

Diagnosis.—The lesson has to be learnt that any fever may be malaria: certainly a typically periodic temperature in the first days of a malarial attack has proved exceptional. The very prevalent "unclassified short fever," however, is often clinically indistinguishable from malaria at that stage: therefore to embark upon a 14-day course of antimalarial treatment on the strength of a clinical diagnosis can seldom be justified. This should surely only be indicated where the patient is gravely ill or where the diagnosis can be made in no other way. In our series, the great majority of the 151 cases termed "clinical malaria" were received in convoys from other hospitals, where antimalarial treatment had already been started.

Treatment.—All the BT cases, and most of the MT, responded quickly to the standard Army treatment, consisting of quinine grains 30 daily for two days, mepacrine 0·3 g. daily for five days, a rest period of two days, followed by pamaquin 0·03 g. daily for five days. In a few MT cases only was it found necessary to give quinine intravenously or mepacrine musonate intramuscularly.

It is clear from the figures given for presumed relapses that the tendency to relapse is very great: relapses have even been observed within a few days of completing the course, in patients known to have taken and absorbed the drugs.

Sulphadiazine.—The antimalarial action of sulphadiazine was tested in a controlled experiment involving 54 patients.[1] The results showed that, though this drug has antimalarial properties, it is slower in action than quinine or mepacrine. A follow-up established that, though apparently rendered parasite-free, 75% of the patients who received sulphadiazine relapsed within four weeks, making it clear that this sulphonamide is not an effective substitute for any of the present remedies.

Complications.—Two cases of acute hæmolytic anæmia have been observed. One patient, who also had hæmoglobinuria, developed this on the fourth day of pamaquin, having had an MT infection: it is possible that the standard course of pamaquin was excessive for this man, who was an Anglo-Indian. The other patient developed his hæmolytic crisis early in treatment, only BT parasites having been reported in his blood. The hæmoglobin levels of these cases fell to 14% and 10% respectively, but returned to normal surprisingly rapidly in both, even though transfusion was withheld in the case with hæmoglobinuria.

Chronic anæmia or persistent splenomegaly were rarely seen, even in patients who had had as many as 15 malarial attacks in as many months.

Deaths.—There were 2 deaths, both in cases of cerebral MT, which failed to respond to repeated intravenous injections of quinine.

Dysentery Group

Table IV analyses the dysentery cases.

TABLE IV—DYSENTERY (1836 CASES)

Dysentery, bacillary, proven			261	(14·2%†)
	%		%	
Flexner	52·4	Schmitz	8·8	
Shiga	15·7	Boyd	8·8	
Sonne	13·8	Newcastle	0·5	
Dysentery, bacillary, clinical			511	(27·8%)
Diarrhœa			509	(27·7%)
Dysentery, amœbic, proven			472	
Dysentery, amœbic, clinical			29	541(29·5%)
Amœbic hepatitis			35	
Amœbic liver abscess			5	
Diarrhœa, flagellate			14	(0·8%)

BACILLARY DYSENTERY

Despite the numbers, this has not been one of our major problems, for severe or resistant cases have been quite uncommon.

Treatment.—We do not feel that we can give unqualified support to Bulmer's plea for the abolition of saline treatment. While accepting the fact that most of these patients make uninterrupted recoveries on rest and restricted diet alone, in our opinion some advantage is gained by giving salines for the first 48 hours. This view is supported by the results of an admittedly small-scale trial (32 cases), in which half the patients received saline and half a peppermint-water draught for 48 hours: the results were remarkedly uniform and therefore seem of some significance, in that the stools of the saline-treated cases became free of blood within 48 hours, while those of the untreated controls continued to contain blood for 3–4 days; it was noticeable also that the only patients who complained of persistent abdominal discomfort were in the untreated group.

Owing to the shortage of sulphaguanidine, we have had to limit its use; but in most of our cases little advantage would have been gained by giving it, so quickly did they recover. A trial of succinyl-sulphathiazole,

1. A full report by Major W. M. Hayes and Captain R. V. Coxon, RAMC, is to appear in the *Transactions* of the Royal Society of Tropical Medicine and Hygiene.

though handicapped by a dearth of severe cases, is now being made. In a series of cases of comparable severity, treated alternately with sulphaguanidine and succinyl-sulphathiazole, there was no significant difference in the rate of recovery in the two groups. There was, however, one complete failure with succinyl-sulphathiazole: the patient remained acutely ill after having 94 g. of succinyl-sulphathiazole in five days; on sulphaguanidine being substituted, he responded immediately and made a complete recovery within two days. No toxic effects have been observed with either drug.

Complications.—Arthritis has been seen in 7 cases; all but 1 recovered completely. Absolute constipation, requiring evacuation by enema and associated with an apparent megacolon, followed chronic dysentery in 2 cases. One patient with severe Shiga dysentery, refractory to treatment, developed the signs of Wernicke's encephalopathy, with external ophthalmoplegia, rotary nystagmus, athetoid movements and complete disorientation of mind. Recovery was eventually complete after intensive treatment with vitamin B_1 and nicotinic acid parenterally.

Deaths.—There were 3 deaths: in each of these, dysentery was the terminal event in patients with other chronic diseases—namely, cirrhosis of liver (2) and chronic refractory anæmia.

AMŒBIC DYSENTERY

Any complacency that we might have felt on contemplating our records of the bacillary group is quickly dissipated by a study of the amœbic cases. Our colleagues in the Middle East may well congratulate themselves on their good fortune, when they see that this infection is more than 25 times as common in India. In fact, *one soldier in every four, admitted to this hospital from local units on account of diarrhœa, is suffering from amœbic dysentery:* an identical incidence has been confirmed by a British general hospital in another part of India (Stewart 1943).

It is not, however, the incidence of the infection which constitutes the problem, but rather its depressing tendency to relapse. Of 333 direct admissions, 45% had been treated for one or more previous attacks, suggesting that the relapse-rate is almost identical with that of BT malaria.

Treatment.—Primary cases have invariably received a course of emetine, varying from 6 to 12 grains, followed by an arsenical (carbarsone, 'Amibiarson,' or acetarsol) by mouth for ten days. The response in 80–90% of these cases has been evident within 48 hours and clinical cure has been rapidly effected. With successive attacks, however, this action has been progressively delayed and lessened, until finally there is no response at all. We have treated relapsed cases with every combination of the drugs at our disposal, with a regrettably small measure of success. Carbarsone, though often giving symptomatic relief, is not curative in these cases. Emetine bismuth iodide (EBI) has unfortunately seldom been available; the substitute, kurchi bismuth iodide, has been quite ineffective, even when emetine hydrochloride has been added to the contents of the capsule. Quinoxyl (2½%) enemas have sometimes achieved results in the less chronic cases; increasing the strength to 4% (the highest concentration which will completely dissolve) perhaps brings more symptomatic relief, but is no more curative in long-standing cases. On receiving a limited supply of EBI, we have recently given to a group of 13 continually relapsing cases the combined EBI-quinoxyl treatment advocated by Manson-Bahr (1941): up to the present (21 days) 6 of these have relapsed, all having vegetative amœbæ in their stools. It is difficult to reconcile the very unfavourable results of this treatment in our hands with the almost invariable cure apparently achieved by Manson-Bahr in his large series. It can only be hoped that when these soldiers receive treatment in the United Kingdom it will prove far more effective than it has done here.

Our depressing experience, which has been shared by our colleagues in other parts of India, makes it abundantly clear that there has been unjustifiable optimism concerning the treatment of amœbic dysentery, and that there is an urgent need for the discovery of a new amœbicidal drug which will effect cure in chronic and relapsing cases.

Hepatitis.—In the absence of abscess formation, the patients with hepatitis have always responded quickly to emetine.

Liver abscess.—Of the small number of cases, all but one recovered after a combination of emetine therapy with aspiration. Air replacement after aspiration, as recommended by Cameron and Lawler (1943), has proved of value, both in gauging the size of the cavity and assessing the response to treatment.

The one fatal case was aspirated on five occasions, 4 pints of pus being evacuated in all. Air-replacement at this stage showed a huge bilocular cavity still half full of fluid. Closed surgical drainage was then carried out and courses of emetine were continued. Despite the large quantity of emetine which he had received (approximately 50 grains) vegetative amœbæ were found in the necrotic liver tissue draining through the tube. At autopsy, extensive amœbic ulceration was found in the bowel and the right lobe of the liver was reduced to a mere shell.

Other complications.—Several cases developed amœbic granulomata with abdominal masses, which in England would certainly have been considered surgical, resembling closely such conditions as appendix abscess, carcinoma of the colon and chronic diverticulitis. One patient with a lung abscess secondary to liver infection responded well to emetine.

Deaths.—Two patients with massive infections died. One of these had both perforation and intussusception.

Chronic Diarrhœa

A certain number of cases, originating as either bacillary or amœbic infections, have while under observation appeared to pass gradually into a state of non-specific colitis, and some of these have been associated with faulty fat absorption. They have been for the most part unresponsive to both antibacterial and anti-amœbic treatment.

Short Fevers

This group of 1134 cases has presented difficulty only as regards nomenclature. Though they have often been termed sandfly fever or dengue, the true picture of sandfly fever, as familiar to one of us (A. W. D. L.) in the Middle East, has not been seen, and the disease has run an altogether milder course. Similarly, few of the cases have resembled typical dengue; they have simply had fever and its associated symptoms without respiratory catarrh for 2–7 days. As in sandfly fever and dengue, leucopenia has been common.

Steatorrhœa

During the year 52 patients were seen in whom the presenting symptom was a chronic fatty diarrhœa: comparatively few of these, however, showed the full sprue syndrome of defective fat, carbohydrate and vitamin absorption. It has been brought home to us that, given adequate treatment for a sufficient period, the majority of these cases will make full recoveries in India. Of our 52 patients only 18 have been evacuated; 25 have returned to duty in a lower category and 9 are still receiving treatment. Such cases as we have been able to follow have shown no tendency to relapse under reasonably good living conditions. We feel therefore that the indiscriminate use of the term "sprue" is to be deprecated, in view of the serious implications that this diagnosis conveys to the lay mind.

Under war conditions we have unfortunately not been able to investigate these cases as fully as we would have liked; we do not feel therefore in a position to shed much light on the nature of the syndrome. Certain points of interest, however, have emerged. It seems clear that steatorrhœa may arise de novo or as a sequel to dysenteric infection: in our series at least 11 cases passed gradually from a recognised dysentery (4 amœbic, 7 proven or presumed bacillary) into a state of steatorrhœa.

The prognosis seems to be determined by the stage at which effective treatment is started. It is tempting to postulate that the critical factor is the occurrence of irreversible change in the bowel mucosa due to secondary deficiency of vitamins. In our experience the percentage of fæcal fats has no prognostic value; in fact the average figure for our cases which recovered was higher (39·3%) than for those who were evacuated as being unresponsive

to treatment (36·7%) and the patient showing the highest fat content recorded (76%) made a complete recovery. It is not generally recognised that a pale stool is not necessarily fatty, and that a stool of normal colour may contain excess of fat.

Test-meal figures are available in 26 cases: of these 14 gave a normal curve, 3 showed hyperchlorhydria, 3 showed hypochlorhydria, and 6 had a histamine-fast achlorhydria. In 7 cases a barium follow-through was done and in none was there evidence of intestinal hurry. Severe anæmia was not seen, though there were slight degrees of both hyperchromic and hypochromic anæmia in a few cases. Glucose-tolerance curves in a small series were normal except in one patient who had a flat curve.

Treatment followed the usual dietetic principles with supplementary liver and vitamin-B complex given both orally and parenterally. It was striking to observe patients gaining weight on a low-fat diet but losing it again if fats were increased prematurely. The associated glossitis did not always recover after the administration of vitamin-B preparations, but riboflavin in a pure form has not been available. From review of this series it has become clear that in an average case treatment must be maintained for at least six months before full recovery can be expected.

Effects of Heat

In this district heat-stroke is rare: nearly all the cases in this group, therefore, were of heat exhaustion, and in these a psychological disturbance, rather than dehydration or salt depletion, appeared to be the precipitating factor. Three patients, however, were received from other hospitals, who showed interesting but complicated neurological sequelæ to heat hyperpyrexia: in these, aphasia and signs of cerebellar degeneration were the outstanding features. All three had temperatures of 109–110° F., and had been unconscious for periods of four days to two weeks.

Tropical Typhus

Of 42 cases, 19 were received in a convalescent stage from other areas: the remaining 23 contracted the disease locally, 4 of them in fact while in this hospital for other conditions.

This variety of the disease has not been particularly severe, and all have recovered. The vector is unknown; the infection is not associated with louse infestation or obvious insect bites, and one is left with the possibility that a flea is concerned.

The average duration of fever was 14 days and in the absence of complications it showed little variation: termination was always by rapid lysis. A generalised maculopapular rash appearing nearly always between the 3rd and 6th day was present in 18 cases; the spleen was enlarged in 14; but in a few neither of these features was seen. Conjunctival injection, especially in the outer segment, was common. Of 15 cases in which the leucocyte count was recorded, it was normal in 8, there was leucopenia in 4, and slight leucocytosis in 3.

Of the 23 cases investigated in this hospital the Weil-Felix reaction showed a significant rise in titre (1 in 250 and upwards) in 21: the remaining 2 were considered to be clinically identical. A positive reaction was never obtained before the 10th day. Maximum agglutination to OX19 was seen in 13 cases, to OXK in 3 and to OX2 in 3. OX19 was agglutinated in equal titre with OXK and OX2 respectively in the other 2 cases. There was no apparent clinical distinction between the various antigenic types.

The early and confusing occurrence of a positive Widal reaction in typhus is well known. In our series, all of whom had received previous TAB inoculation, agglutination with T (O) to a titre of 1 in 160 was seen in 5 cases, and to a titre of 1 in 320 in 3. Agglutination with RV and Vi antigens was unaffected.

The clinical differentiation between typhus and enteric was often difficult, sometimes impossible. The points we have found most helpful in distinguishing typhus have been the conjunctival injection, the absence of respiratory signs, the earlier appearance and wider distribution of the rash, the softer abdomen, and the usual absence of leucopenia.

Two cases only have shown complications: one developed femoral thrombosis with a pulmonary infarct, and the other an acute hæmorrhagic nephritis.

Tropical Eosinophilia

The association of non-tuberculous pulmonary lesions with eosinophilia was first noted by Frimodt-Möller and Barton (1940) among patients at a sanatorium in South India. The clinical identity of this syndrome has since been established by Weingarten (1943), who also discovered a specific remedy. During the last eight months, we have seen 7 cases in this hospital. The condition is characterised by bronchitis, with or without asthma, associated with an intense eosinophilia. The X-ray appearances are often normal, but occasionally coarse mottling of the lung fields is seen. An initial febrile phase with splenic enlargement is described by Weingarten.

All our patients were young Indians or Anglo-Indians, who had lived for long periods in coastal districts; the same association was noted by Weingarten. Symptoms had been present since childhood in one case and for periods varying from six days to one year in the others. Only one patient showed any X-ray abnormality, and in this man the initial radiological diagnosis was miliary tuberculosis. The total leucocyte counts varied from 11,400 to 47,600 per c.mm., and the percentage of eosinophils from 41 to 72. Repeated examination of the fæces and sputum did not reveal the presence of any parasite, except in one patient who had *Strongyloides stercoralis* in his stools (Weingarten was also unable to find parasites in the fæces, sputum or blood of any of his 81 cases).

The recommended treatment with intravenous neoarsphenamine proved entirely satisfactory. All patients became symptom-free after three injections, and after an initial rise the total leucocyte count had always returned to normal by the sixth injection, though the percentage of eosinophils was still slightly raised at the time of discharge from hospital. The abnormal radiological appearances, seen in one patient, did not alter. It is worthy of comment that one of these patients, who was invalided from the Middle East with a recommendation for discharge from the Army on account of chronic bronchitis, was returned to duty in medical category A1.

Kala-azar

The man with kala-azar, who had spent three months in an endemic area, presented the clinical features of fever, anæmia, leucopenia and splenomegaly, and responded dramatically to urea-stibamine intravenously. Sternal puncture and the formol-gel test were negative, but Leishman-Donovan bodies were found by spleen puncture and the antimony precipitation test (Chopra) was positive.

* * *

TABLE V—INFECTIOUS DISEASES (1254 CASES)

Infective hepatitis	992	Mumps	5
Smallpox	68	Encephalitis	4
Poliomyelitis	59	Scarlet fever	3
Enteric group	45	Measles	2
Acute rheumatism	36	Meningitis, pneumococcal	1
Diphtheria	15	Meningitis, meningococcal	1
Rubella	7	Septicæmia, meningococcal	1
Glandular fever	7	Undulant fever	1
Chickenpox	6	Erysipelas	1

Infective Hepatitis

Though very prevalent, this disease has usually run a mild course. In our 992 cases (table v) the average duration from onset of symptoms until discharge from hospital has been 29 days, though exceptional cases remained jaundiced for as long as 14 weeks. Our experience of this large series adds nothing to the admirable account of the disease already given by Cameron (1943), though we have not been able to identify the clinical entity "infective hepatitis sine ictero" with anything approaching the frequency that he did, nor have our cases as often had large spleens.

It is noteworthy that, of the last 367 cases admitted, 42 (11·4%) were receiving antisyphilitic treatment; this association is of course well recognised, some VD clinics in Great Britain having reported an incidence of jaundice as high as 20% among their patients undergoing treatment (Duff 1943).

There were no deaths and few complications: a hæmorrhagic tendency was seen in only 2 cases. Brief recrudescences of jaundice were seen occasionally; more common was a flatulent dyspepsia persisting some weeks.

Smallpox[2]

During the period November, 1942, to April, 1943, there was an epidemic among the civil population of this district. Troops in the neighbourhood soon became involved and 68 British soldiers were admitted to this hospital with the disease. Though the vaccination state of these men could not be considered at all satisfactory, the majority had some degree of previous protection and most of the cases were therefore of modified or minor type; there were, however, 22 major cases, and of these 10 were fatal (table VI).

TABLE VI—MAJOR CASES OF SMALLPOX

Last successful vaccination	Number	Deaths
Nil	11	8
Infancy	9	2
Within 5 years	1	0
Within 2 years	1	0
Total	22	10

On admission the patients were usually in the pre-eruptive stage, and it proved impossible to distinguish them from the cases of malaria and short fever which form the bulk of the hospital's daily admissions. It became necessary, therefore, to admit all patients with undiagnosed fever to a special observation ward, where they were held under barrier-nursing precautions until the possibility of smallpox could be excluded. Unless evidence was forthcoming of successful vaccination within the previous 12 months, this was carried out on admission: the practice of universal vaccination during an epidemic, however, though seemingly unavoidable, is not without its risks; at least 5 patients, who were already incubating the disease, developed an aggravated form as a result of vaccination, and 2 of these died. In one of these fatal cases, eleven days elapsed between vaccination and the appearance of the rash: such an interval is usually considered to be protective, yet this patient developed hæmorrhagic smallpox.

A detailed description of the clinical features would be out of place in a report of this kind, but all types of the disease were seen, the severity and course depending essentially on the degree of protection possessed by the individual. The following complications were noted: acute orchitis, hæmorrhagic nephritis, peripheral neuritis, iritis, multiple subcutaneous abscesses. Of the 10 fatal cases, 2 were frankly hæmorrhagic, 4 showed some hæmorrhagic tendency, and the remainder had confluent pustular eruptions.

Treatment.—Apart from the usual local measures, xylol was given orally to all the earlier cases, as advocated by Haughton (1942), but in our opinion this did not influence the course of the disease. Sulphapyridine, in full dosage, was given in 10 major cases with equally disappointing results. The failure of the latter drug prompted an investigation into the identity of the secondary pyogenic invader responsible for pustulation: this has generally been assumed to be a streptococcus, but culture from pustules gave a pure growth of *Staphylococcus aureus* in all of 18 cases examined. On the strength of this finding, sulphathiazole was substituted for sulphapyridine, but unfortunately late in the epidemic, and only 12 major cases received this treatment. The results, however, were sufficiently striking to make us regret deeply that this drug had not been given from the start. Our conclusions were that, if full dosage was started some days before the expected onset of pustulation, this could be aborted or modified, with control of the secondary fever and great reduction in toxicity. Several severe cases, in which pustulation had been thus checked, recovered with hardly a trace of scarring.

Enteric Group

Of the 45 cases, 32 were typhoid, 11 paratyphoid A, 1 paratyphoid C, and 1 a septicæmic infection with *B. enteritidis* Gaertner. Diagnosis was by blood-culture in 24, by a culture from urine or fæces in 2, and by consideration of clinical features with the Widal reaction in the remainder. The appearance and course of the disease were usually typical, though some patients had little to show except continuous fever. A rash and an enlarged spleen were each present in only half the cases. Leucopenia was a very constant finding. The average duration of fever was 26 days; 5 patients had one or more relapses. Complications were few: 1 patient had a small bowel hæmorrhage and 3 developed jaundice, almost certainly due to infective hepatitis, during their illness.

Widal reaction.—We have been disconcerted to find how fallacious the Widal reaction may be. As is well known, inoculated subjects may show high agglutination titres for T (O) antigen, when suffering from infections other than enteric. We have already instanced this finding in cases of typhus, but perhaps our most striking example—T (O) 1 in 640—was in a case of smallpox. In contrast, many cases of enteric, proved by blood-culture, have shown no significant agglutination with the antigens in general use, or have, when serially examined, been positive once only.

Treatment.—To ensure an adequate calorie, vitamin and fluid intake in these patients, often semi-delirious and resistive, demands untiring efforts from the nursing staff; but in our experience this has been the major determining factor in their recovery.

Deaths.—Two patients died, both cases of typhoid: one of these was remarkable in that, though treated throughout as a "clinical enteric," a positive blood culture was obtained for the first time after 10 weeks of fever. Our mortality-rate for the series is thus 4·4%: one cannot resist a comparison with the 25% mortality-rate in Bulmer's cases, but doubtless there were special circumstances of which we are ignorant.

Acute Anterior Poliomyelitis

Almost all the 59 (table V) were cases of limb paralysis received in the convalescent stage from other hospitals. In 2 acute cases, involvement of respiratory muscles necessitated the use of an "iron lung." Both these patients died, one within three days. The second, after 5½ months, seemed at last to be able to dispense completely with the respirator; but a few days later he collapsed without warning and died. Post mortem, both lungs were reduced to half the normal size, and showed advanced emphysematous changes.[3] Microscopic examination of the brain-stem showed no evidence of vascular lesions such as we understand have been reported in an outbreak in Malta.

Respiratory Diseases

As in Bulmer's series, the respiratory group of diseases (table VII) stands second only to tropical diseases, and we can fully endorse his remarks concerning the unsuitability for service in the tropics of men with any tendency to chest complaints; they deteriorate as badly in a dry dusty climate as in a humid one.

TABLE VII—RESPIRATORY DISEASES (1377 CASES)

Tonsillitis and quinsy	450
Bronchitis, bronchiectasis, asthma	559
Pneumonia	116
Diseases of pleura	91
Pulmonary tuberculosis	56
Miscellaneous	105

Among our patients with tuberculosis, it was depressing to find the great majority already with bilateral disease. This appears to be almost the only disease which is not diagnosed early in the soldier.

Skin Diseases

All the common skin diseases were seen, and the total for the year was 1242. Our remarks about respiratory conditions apply with equal force to skin complaints. A number of men, incapacitated by persistent skin lesions, had apparently developed these the moment their troopship entered tropical waters.

2. A more detailed account of this epidemic is being published by one of us (A. W. D. L.) in the *Journal* of the RAMC.

3. Since the period covered by this report, a second patient has died after being in a respirator, and the lungs showed emphysematous changes in this case also. The pressures were those normally used.

Diseases of Alimentary Tract

A rough classification is given in table VIII.

TABLE VIII—DISEASES OF THE ALIMENTARY TRACT (446 CASES)

Peptic ulcer ..	.. 152	Chronic dyspepsia ..	168
Gastric	49	Miscellaneous	126
Duodenal	103		

Excluding the cases of peptic ulcer sent from other hospitals with a recommendation for invaliding, the percentage of proven ulcers among 215 dyspeptic patients has been 23: this figure, however, is still artificially high, owing to the reception of ulcer cases in convoys from overseas.

It seems now generally accepted that Army life cannot be blamed for the development of peptic ulcers, and our experience certainly supports this view. Of the whole series, 71% of the patients had had symptoms before the war: in fact, the average duration of symptoms for all the cases was 5½ years.

It has been brought home to us that in this part of the world additional causes for dyspepsia exist. Thus in any patient with negative X-ray findings, whose symptoms have started since his arrival in the tropics, it is necessary to exclude the possibility of amœbiasis, presenting as a flatulent form of dyspepsia with nausea but with little evidence of true dysentery. Similarly, worm infestation may provide a pitfall for the unwary.

Deaths

Table IX shows the causes of death.

TABLE IX—DEATHS

Smallpox	10 (14·7%)	Chronic nephritis with uræmia	1
Dysentery, bacillary	3 (0·38%)	Subacute-bacterial endocarditis	1
Dysentery, amœbic (1 with liver abscess)	3 (0·55%)	Septicæmia	1
Poliomyelitis ..	2	Malnutrition	1
Malaria	2 (0·07%)	Pulmonary tuberculosis	2
Enteric	2 (4·4%)		
Coronary thrombosis	2	Total	30

* Complicated by (*a*) hæmochromatosis, (*b*) cirrhosis, nodular, (*c*) refractory anæmia.

Summary

A paper of this nature is difficult to summarise; but the following statements appear worth repetition.

1. Tropical diseases accounted for only half the total admissions.

2. The standard combination of antimalarial drugs does not lower the relapse-rate of benign tertian malaria to a satisfactory level.

3. One patient in every four admitted to hospital for diarrhœa has amœbic dysentery: the relapse-rate appears to be identical with that of benign tertian malaria.

4. The treatment of chronic amœbic dysentery with existing drugs is extremely unsatisfactory. There is urgent need for pharmacological research in this direction.

5. Patients with steatorrhœa can make full recoveries in India.

6. The condition "tropical eosinophilia" must be the cause of respiratory symptoms in numbers of Indians. As this disease is readily amenable to treatment, its recognition is of some importance.

7. Infective hepatitis has been the third most common disease: 11% of the cases were receiving antisyphilitic treatment.

8. In a smallpox epidemic, *Staphylococcus aureus* was consistently found as the secondary invader. Sulphathiazole had a considerable inhibitory effect on pustulation and the associated toxæmia.

9. Among 45 cases of enteric, treated throughout with high-calorie diets, the mortality-rate was 4·4%.

10. Any man with a tendency to respiratory or skin disease is likely to be a liability in India.

Comment

This necessarily analytical presentation does scant justice to what has in fact been a remarkably interesting and varied experience. Besides the conditions we have thought worth discussion, we have seen examples of almost all the diseases encountered in hospital practice at home. Such a vast intake of patients would ordinarily provide unique opportunities for research, but under existing conditions any investigation is out of the question which imposes additional demands upon a laboratory service already swamped by routine work. Clinical research is correspondingly handicapped by the difficulty in following up cases, and by the frequent changes in medical staff inevitable in a war-time hospital. We hope, however, that from the foregoing account it will not appear that we have altogether neglected our opportunities.

We cannot end without an expression of gratitude to the many medical officers who have worked in the division during the year; in spite of constant pressure of work they have found time to compile for all their cases the clinical abstracts upon which this review is based.

We would like to thank Colonel J. D. S. Cameron, AMS, consultant physician, Southern Army, for much help and encouragement in the preparation of this paper and throughout the year's work.

We are grateful to Colonel G. Moulson, AMS, for permission to publish this article.

REFERENCES

Bulmer, E. (1943) *Brit. med. J.* i, 374.
Cameron, J. D. S. (1943) *Quart. J. Med.* **47**, 139.
— and Lawler, N. A. (1943) *J. R. Army med. Cps*, **80**, 1.
Duff, K. (1943) *Lancet*, i, 568.
Frimodt-Möller, C. and Barton, R. M. (1940) *Indian med. Gaz.* **75**, 607.
Haughton, S. G. S.; (1942) *Brit. med. J.* ii, 736.
Manson-Bahr, P. H. (1941), *Ibid*, ii, 255.
Stewart, I. S. (1943) Personal communication.
Weingarten, R. J. (1943) *Lancet*, i, 103.

WOUNDS OF THE JOINTS

H. FRUCHAUD, M D

COLONEL AND CONSULTING SURGEON, FREE FRENCH FORCES; PROFESSOR OF SURGERY, UNIVERSITY OF ANGERS

EVERYBODY agrees that wounds of joints should be treated by early excision of all non-viable tissue. But this simple doctrine does not answer all the questions that arise in practice.

SUTURE OF SYNOVIAL MEMBRANE

We are taught that any primary infection remaining in the joint after excision is more likely to clear up if the synovial membrane is sutured, while closure will also guard the joint against secondary infection. But though immediate suture may be the ideal, it is hardly a policy for the battlefield. In the field, most joint wounds are complicated by compound fractures; operation is often delayed until long after wounding, when infection may already be established; and damage to the synovial membrane may make it impossible to close the gap.

How then should one deal with a knee whose anterior planes have been wiped away by a shell splinter, or with a wrist or ankle-joint whose synovial membrane is an anatomical cloud rather than a surgical reality? Ought we to suture the skin, as Böhler advises?—When the "attrition room" beneath it consists of bruised cellular tissue, crushed aponeurosis or tendons, and muscles deprived of their blood-supply? When, whatever care is taken, debridement cannot be perfect, since it must leave infected soft tissues with little resistance against infection?

Even when it is possible, closure of the synovial membrane is often dangerous. Some 6 or 8 hours afterwards exudate begins to flow into the joint, being the first sign of infection. No doubt this synovial fluid has strong bactericidal properties, but they are transient; they are due to its high protein content, and in an infected joint the proteins, quickly disintegrating, become a good medium for the growth of organisms. The bactericidal property of the synovial fluid only persists if the old fluid is removed, and fresh new fluid is allowed to take its place. Suture of the membrane, by interfering with this regular flow, checks the natural mechanism of defence, and intermittent aspiration of exudate from a closed joint may not suffice to prevent suppurative arthritis.

To leave the joint open is the one way to ensure constant flushing of the articular space by an active outpouring of fresh fluid, and in practice it is found that a widely open joint puts up a better fight against infection.

It is wrong to suppose that an open joint is doomed to secondary infection. If it is strictly immobilised under a permanent dressing, no such accident happens. As soon as infection is overcome by the flow of synovial fluid the flow subsides, and the protein coagulates in the synovial gap as a thin layer of fibrin. Thus in a short time, a joint anatomically open becomes biologically closed. But this fragile barrier of fibrin is effectual against secondary infection only if it remains intact: the mere changing of a dressing, the slightest movement, is liable to break it; and this must be avoided at all costs.

When immobilisation is perfect, granulation tissue quickly replaces the fibrin and in a fortnight becomes strong and resistant. Secondary suture, or skin-grafting, may be used to seal the wound, but in any case the function of the joint will be restored in two or three months. It is true that primary suture might have restored function much sooner—but not if an acute arthritis developed.

To get good results it is only necessary to leave the joints open: it is not essential to pack them with soft-paraffin gauze, after the latest fashion. Packing of an articular wound, by injuring the delicate synovial membrane and cartilage, interferes with natural defences against infection and with recovery of joint movement.

ARTICULAR WOUNDS WITH FRACTURES

Surgeons differ acutely over the treatment of osteo-articular wounds. The French school, following Ollier of Lyon, practise formal resection of the joint, an operation which has given wonderful results since 1916, and especially in the present war. Other schools, the British in particular, hold it in less favour.

The Lyon surgical school observes the following principles with good results.

When the fracture is composed of simple fissures in the major epiphysis—without much displacement—or when it bears on apophyses of minor importance, we do a conservative operation. This consists in gentle but complete exploration and toilet of all the bony fissures as far as their upper end (no corner of a fracture must be left unexplored, whatever the immediate cost) with excision of every small spicule of bone and trimming of every small hole. But when the fracture runs through a main epiphysis, the fragments being much displaced or crushed, and the destruction of cartilage considerable, we undertake immediate formal resection (primary resection).

Primary resection is satisfactory only when carried out according to the Ollier technique: this entails total or subtotal but regular and even removal of the broken epiphysis, carried out by slowly peeling away the bony fragments with a sharp raspatory which bites into the bony tissue. The whole operation is carried out inside the capsule, which is of course made up of periosteum, and the insertions of the articular ligaments and muscles. At the end of the operation this capsule has tiny spicules of bone adhering to its inner surface. It is thus unfair to translate the French word articular "resection" by the British term "excision," since excision suggests an easy and speedy operation carried out with a scalpel and saw.

When executed according to Ollier's technique, articular resection gives excellent functional results. We seek to produce either ankylosis in a good position by long postoperative immobilisation (for knee, and sometimes for shoulder and hip); or pseudarthrosis by an early mobilisation, after three or four weeks (the method commonly used for elbow, wrist and hip, and generally for the shoulder).

For osteo-articular wounds seen within 24 hours of injury we perform a conservative operation if the bony damage is limited, or a formal resection if it is extensive. After 24 hours formal resection is needed for every intra-articular fracture except the very small ones. Many surgeons will think this too peremptory; but when one remembers that the broken spongy tissue of the epiphysis has no defence whatever against infection and when one sees so many wounded treated conservatively at the start and submitted to amputation 6, 10 or 20 days later because of sepsis, we are justified in saying that it is better to avoid infection and save limbs by producing ankylosis in good functional position, than to amputate five osteo-articular wounds out of ten, and allow the other five to acquire osteomyelitis.

INFECTION OF WOUNDED JOINTS

Acute and suppurative arthritis.—Wounded and infected joints fall into two classes: (1) cases with intra-articular fractures; and (2) cases without fractures.

For infected cases with fractures, only one thing has to be done—formal articular resection. In such cases the operation is not primary, or prefebrile, resection but secondary or intrafebrile resection.

This operation, carried out in a septic field, is not without risks; it is sometimes followed by a severe reaction, and occasionally by a general septic spread, though sulphonamides taken before and afterwards, orally or intravenously, give some protection. The risk is far less when the secondary resection is performed early—after 2, 3, or 4 days—rather than later. But whatever the danger, resection is better than expectant treatment, which leads inevitably to general infection or severe osteomyelitis; if left most of these limbs will require amputation some days later under worse conditions or will develop a defective ankylosis with suppurating sinuses. On the whole we find early secondary resection at knee and ankle to be satisfactory, and even late secondary resection at the elbow, wrist, and shoulder; but fractures and infected hips resected late seldom escape disarticulation.

On the treatment of infected cases without fractures surgical authorities disagree, but it would be tedious to review all the proposed methods of treatment. Too many treat infected joints as they do infected wounds in general, disregarding the special pathology of joints. It is important to make a clear distinction between the defences offered by the soft tissues and those offered by synovial membranes.

In the soft tissues, the outpouring of tissue fluids which constitutes the primary defence lasts only a short time. After two or three days secondary defences come into play—first cellular exudate and later granulation tissue which surrounds and isolates the infected area.

In the joints the course of events is different. The primary defence (the outpouring of synovial fluid) persists for a long time, sometimes a week; but the secondary defence (the formation of a strong and uniform barrier of cellular exudate and granulation tissue) does not develop inside or around an infected joint, and the infected area never becomes entirely cut off from surrounding tissues. Thus in dealing with infection of a joint, we can count only on the primary defence (synovial fluid) and never on the secondary defence.

The treatment of infected wounds of soft tissues and infected wounds of joints is thus quite different. Either excision or drainage must be considered.

Excision of infected wounds.—Generally it is dangerous to excise a wound of soft tissues after 36–48 hours or more, the later the wounded arrive in the theatre, the more confined must be the operation. Thorough debridement (wide exposure of the wound) is nearly always necessary, but excision has to be kept within the secondary defence barrier—sometimes avoided altogether—and the missiles, the foreign bodies embedded in this barrier, should not be sought systematically at this time.

But whatever the stage at which a wounded joint is admitted, a complete operation has always to be carried out. Ogilvie[1] writes (of the knee):

"After 24 hours the bacteria have established their entry and the tissues have established their defences. The time for debridement is past, and the alternatives are expectancy or drainage."

He recommends expectant treatment involving efficient immobilisation, aspiration as required and continuance of chemotherapy.

I cannot agree with him. First, French surgeons will not accept this misuse of the French word *débridement*: for by debridement Ogilvie means excision, in which sense we have never used it. Debridement means only the wide opening of a wound, but not its surgical toilet. Secondly, we hold strongly that to treat expectantly an articular wound admitted after 24 hours, without signs of clinical infection, or admitted later

1. Ogilvie, W. H. *Lancet*, 1941, i, 471.

with evident infection, is to make later amputation a certainty. There is only one exception to this rule—the through-and-through bullet wound with punctured entry and exit. All other wounds of joints, whatever the time of admission, must be operated on, and thoroughly too. When devitalised tissues or foreign bodies are left inside a joint, however strong the primary defence, however bactericidal the synovial fluid, the time quickly comes when the primary defence subsides and the joint is exposed to reinfection; suppurative arthritis begins, because no zone of granulation tissue walls it off. Experience of many cases indicates the importance of surgical toilet in all.

Drainage of infected joints.—When causes of reinfection have been removed it is time to think of the later behaviour of the infected synovial membrane.

To drain is to evacuate either by aspiration or by gravity an artificial pocket, surrounded by inflammatory exudate or granulation tissue, in which dead fluids, blood or pus are retained. Drainage on these lines is an artificial procedure, and applies especially to wounds of soft tissues which, infected or not, are quickly surrounded by a secondary barrier of defence.

A joint is not an artificial cavity: it is a normal space with walls capable of resisting the penetration of organisms for a long time and of producing potent bactericidal fluid. When infected, this space is constantly washed by the articular secretion: all that is necessary is to ensure the escape of stale fluid so that fresh can replace it. If stale fluid accumulates inside the joint, the cavity takes on the properties of an artificial one, and septic accidents follow. Wide arthrotomy allows the fluid to escape, and the natural defences, thus safeguarded, are generally sufficient to stop infection.

Infected joints, then, once cleaned up, and open, need no artificial drainage. Openings must be made by way of the simplest surgical approaches, not by difficult incisions aiming at gravity drainage. Thus in the case of knee-joints, long anterior incisions on both sides of the patella are excellent, whereas posterior incisions by the popliteal region cannot be made large enough for their purpose and may open extensive cellular planes to infection. Whenever possible (especially at the knee), the opening in the synovial membrane should be made to gape, by suturing the membrane to the skin with catgut stitches (arthrostomy). The aim is to allow the natural and regular flow of bactericidal fluid to wash the articular surfaces and escape. Everything likely to interfere with natural local defences should be prohibited: drains, or packing convert the joint into an artificial cavity and cause the inner layer of the synovial membrane (which is a barrier to germs only as long as it remains intact) to ulcerate. In the same way, antiseptics or antiseptic irrigations are useless and generally harmful. The natural defences are aided by strict immobilisation and by chemotherapy, either oral or intravenous.

Not all joints, however, are like the knee-joint. The knee is an evenly curved joint in which the synovial membrane has an important share. Other joints (hip, elbow, wrist, ankle) have different morphology and biology. In them, masses of bone covered by cartilage (head of femur, astragalus, olecranon, bones of carpus) form a salient into the joint, and create an irregular channel for the outlet of fluid. Owing to these salients the proportion of active tissue (synovial membrane) is reduced in favour of neutral tissue (cartilage). The resistance of such joints is therefore less than that of the knee, the shoulder, or the finger joints.

In severe suppurative arthritis of hip, ankle, wrist, or elbow, then, the first step is to take off the salient (head of femur, astragalus, carpal bones, olecranon). But once this is done, the joint has been converted into a dead space, an artificial cavity, which must be drained by gravity through a rubber tube reaching the floor of the cavity, but not penetrating beyond.

This simple treatment succeeds in most cases; but in very severe ones, especially those operated on too late, the resistance of the synovial membrane is lost. Organisms invade it and enter the cellular planes surrounding the joint. Is it possible, at this stage, to stop the infection and to avoid amputation by intrafebrile, or secondary, resection? This difficult question cannot be considered in a short paper.

IMMOBILISATION OF WOUNDED AND INFECTED JOINTS

Whatever operation has been performed, complete immobilisation is necessary after operating on a joint; otherwise serious complications follow. Strict immobilisation not only safeguards healing, but helps primary infection to subside and prevents cross-infection—provided the dressing is permanent, the tissues are completely at rest, and the wound acquires the protection of granulation tissue.

Many surgeons think they have immobilised a joint well, when they have done nothing of the kind. To immobilise a joint, it is essential to enclose in the plaster the two joints on each side of the wounded one; yet I have seen cases of acute arthritis of the knee treated by a plaster cast reaching only as far up as the middle of the thighs, instead of embracing the hip-joint and the pelvis.

Immobilisation is far less satisfactory with a splint (such as a Thomas splint), than with a plaster cast. In a case of infective arthritis, the first window should not be made in the plaster until 8–12 days have passed.

Results of the plaster treatment will be uniformly good only when an antiseptic plaster cast is used. Otherwise the plaster itself quickly becomes a source of infection: organisms from the infected joint and the skin multiply inside it and reinfect the joint. The plaster acquires a bad smell, being soaked with pus, fever does not subside, and healing is not sound. The most successful antiseptic plaster I have used is made by adding a small quantity of formalin to the water in which the plaster bandages are soaked. This is an important detail.

SURGICAL EXPOSURE OF WOUNDED JOINTS

As a rule, mere opening up of the entrance and exit wounds made by the missile does not allow a good surgical toilet of the joint, especially when these wounds are badly placed from an anatomical point of view. Nor are the classical approaches to the joints, good in ordinary cases, always adequate when there is gross bony injury or when a missile has penetrated deeply into the joint or epiphysis. In such cases wide exposure of the joint is needed. To avoid any septic risk, the whole track of the missile must be explored and cleaned, but the surgeon must not forget the function of the joint, or mutilate it unduly.

In 1918, French surgeons, particularly Pierre Duval, suggested wide exposure of joints by cross-section of the bones or ligaments (section of the patella or of the patellar ligament, of the olecranon, of the acromion, &c). From the functional standpoint these operations are unsatisfactory, and they necessitate later suture of the ligament or setting of the bone in conditions which are never perfectly aseptic.

We now use different methods, removing the bony process obstructing the passage to the joint (patella, acromion, olecranon, greater trochanter), but conserving carefully every tendon, ligament, capsule and muscle around the joints. In order to do this the skin incision must be made very long; the muscles and the ligaments are separated in the direction of their fibres by the same long incision, and bony processes are taken off slowly with a sharp raspatory, which bites the bone and leaves bony spicules attached to the interior of the ligaments. In this way good exposure of the joint is secured; and when the operation is finished, dissociated ligaments are easily brought together by one or two catgut stitches. Exact approximation is seldom necessary (except after extirpation of the acromion). The static and propelling elements of the joint are fully respected and the recovery of function is excellent.

These large incisions are used only for very serious and very deep wounds of joints; for the ordinary wounds we employ the classical exposures. Thus we expose a knee articulation, severely wounded, by a very long incision situated on the midline; this incision begins on the thigh and ends on the upper leg, and we take off the patella. But if the wound of the knee is simple we use the classical approach on each side of the patella.

To expose a hip wound we make a very long incision beginning at the anterior spinous process of the ilium, and proceeding down the thigh between the tensor fasciæ latæ and gluteus medius on the outside; and the

sartorius, rectus femoris, and vastus externus on the inside. The greater trochanter is taken off by the raspatory, starting from its anterior edge. The neck, head, and upper shaft of the femur are well exposed.

SUMMARY

French and English methods in the treatment of joint wounds are contrasted. English surgeons favour closing the joint cavity, where possible, by stitching the synovial membrane; and they treat later sepsis by aspiration of fluid or, if necessary, amputation of the limb. The French method is to leave the joint widely open, so as to ensure a constant flow of synovial fluid; later treatment aims at arthrodesis or pseudarthrosis.

In articular wounds with fractures the French School favours complete exploration of all simple fissures in the main epiphysis. Severe fractures through the main epiphysis, with much crushing or displacement, are treated by primary resection by the Ollier technique.

Infected joints with fractures are treated by formal articular resection, done as early as possible.

Treatment of infected joints without fractures must be planned with special attention to joint pathology. The knee-joint can be opened by long anterior incisions on both sides of the patella, or (in severely wounded cases) by a very long midline incision, removal of the patella. In joints where a long process of bone projects into the cavity (e.g. the head of the femur) this process must be removed, and the dead space left must be drained by gravity, through a tube.

Immobilisation is best achieved by plaster, which must be long enough to take in the joints at either side of the wounded one. Antiseptic plaster should be used.

Wide exposure of joints through special incisions is needed when there is gross bony injury, or where a missile has penetrated deeply.

ACRIDINES IN SEPTIC WOUNDS

USE OF 5-AMINOACRIDINE *

HUGH R. G. POATE, MB SYDNEY, FRCS, FRACS
GROUP-CAPTAIN; CONSULTING SURGEON, ROYAL AUSTRALIAN AIR FORCE

ALTHOUGH the acridine group of antiseptics (originally known as flavines) were introduced by C. H. Browning in 1913 and were used by surgical teams during the late war from 1917 onwards, it was felt that they did not fulfil expectations (Official History of the War 1922). In recent years interest in them has revived, especially since Adrien Albert and his associates introduced 2:7-diaminoacridine and 5-aminoacridine.

Until 1941 the only acridine represented in the *British Pharmacopœia* was acriflavine—a variable mixture of proflavine and its methyl chloride, which is much more toxic than proflavine itself. The only virtue of acriflavine is its great solubility (1 in 3) which permits preparation of highly concentrated stock solutions. The *BP* included proflavine in its Fourth Addendum (1941) but unfortunately the highly acid bisulphate was the salt chosen for the official monograph. This substance, misleadingly termed "proflavine sulphate," has a pH of 2 even when diluted to 1 in 1000, and part of the irritation it produces must be ascribed to its acidity. In the light of present knowledge, the use of acriflavine should be discontinued, and before proflavine sulphate *BP* is applied to wounds it should always be neutralised by addition of one-fourth of its weight of sodium bicarbonate which brings the pH to 6 (Albert and Gledhill 1943).

Mitchell and Buttle (1942) reported very good results from applying proflavine powder directly to wounds; but they recommended this treatment only where there was gross and established sepsis, saying that a minimal amount should be applied and not more than two or three times at intervals of 4–28 days. They were also successful with proflavine powder, mixed with sulphanilamide (1 in 20 or 1 in 40) for prophylaxis in compound fractures where early operation could be performed.

Our own experience is that proflavine powder, when used alone, has an escharotic effect on a wound surface, damaging the epithelialising edge and forming a thick lymph coagulum. Mitchell and Buttle themselves remark that "often a thin eschar forms over the wound, not dissimilar in consistence to that produced by tannic acid in burns ... pus occasionally forms under the pellicle"; also "in some cases a brownish scab forms over the wound which is slowly raised from the surface by the formation of a gelatinous material beneath, possibly coagulated serum." I can confirm these observations and would not employ proflavine powder if either 2:7-diaminoacridine or 5-aminoacridine was available (not in the form of the base but as the monohydrochloride).

The reluctance of Mitchell and Buttle (1943) to make use of 5-aminoacridine in man seems strange, and their finding that when injected into animals it is "more poisonous than proflavine or diflavine" is at variance with the results of other observers applying the scientifically justified "average lethal dose" technique. Ungar and Robinson (1943) state that compared with proflavine it is less inhibitory to the respiration of brain slices, less toxic to tissue cultures, and less damaging to animal tissues on injection. Using various acridines in powder form they found that "proflavine was the most, and 5-aminoacridine hydrochloride the least, inhibitory" to the healing of wounds.

ADVANTAGES AND DISADVANTAGES

The chief virtues of the acridines in general are:—

(1) They inhibit the growth of a wide variety of pathogenic organisms, both gram-positive and gram-negative, without destroying granulation tissue.
(2) They remain fully active in the presence of serum proteins.
(3) They maintain their activity in extreme dilutions.
(4) They are, in the dilutions commonly employed, entirely non-irritant.
(5) They permit, in these dilutions, the functioning of phagocytic cells.
(6) They are compatible with the sulphonamides and are complementary to them in their action on organisms.
(7) They act immediately as bacteriostatics and after a short interval as bactericides.
(8) They are stable to heat up to 150° C.
(9) They are compatible with 2% acetic acid used for the control of a mixed pyocyaneus infection.
(10) Their systemic toxicity is so low that it would take almost two gallons of a 1 in 1000 solution absorbed rapidly to endanger the life of every second patient.

Their main disadvantages are:—

(1) They stain tissues and clothing.
(2) In solution, if exposed to light, the diaminoacridines are unstable.
(3) Proflavine is very acid and damaging to tissues unless neutralised with sodium bicarbonate.
(4) They are adsorbed by the usual surgical cotton dressings. But even so, they are absorbable by wound secretions and do not remain fixed (Albert and Gledhill 1944).
(5) 5-aminoacridine is incompatible with isotonic saline, because precipitation occurs.
(6) If used alone in powder form they are all damaging to tissues.

The compound that stands pre-eminent is 5-aminoacridine because it is stainless, is stable in solution, has a pH of 6, and is innocuous to human tissues in 1 in 1000 solution, while its adsorption on cotton is only 23% as against proflavine 33% and 2:7-diaminoacridine 46% (Albert and Gledhill 1944). It is now manufactured commercially in Australia under the trade name of 'Monacrin'[1] and since June, 1943, we have tried it in many varieties of infected wounds. The results of six months' trial at a large Australian general hospital were reported to the Australian Medical Directorate by Lieut.-Colonel K. Starr, and a paper by Major H. Turnbull has been submitted to the *Australian and New Zealand Journal of Surgery*.

* This paper has been abridged. To prevent delay in publication no proof has been submitted to the author.—ED. L.

1. Monacrin is 5-aminoacridine monohydrochloride dihydrate, and is made by Bayer Pharma Pty Ltd.

EFFECT ON WOUNDS

Although 5-aminoacridine hydrochloride was chiefly used, 2:7-diaminoacridine was also tested; but it was not favoured in the wards because of its staining propensity. Both these acridines were applied as powders (alone or with sulphanilamide) and in solutions of varying strength, but finally 1 in 1000 became the standard concentration. When there was a *pyocyaneus* infection 2% acetic acid was added.

At once it became apparent that no antiseptic could be expected to atone for surgical carelessness. To get the best results all sequestra and sloughs must be removed at the earliest possible moment, access to and drainage of deep or extensive wounds must be efficient, immobilisation of fractures must be adequate, and the patient's hæmoglobin must be kept as near normal as possible. Closed-plaster treatment was abandoned.

The effect of the two acridines was that the wounds soon became surgically clean; healthy granulations promoted rapid healing. All purulent discharge ceased within a few days, thus relieving the patient of a continuous drain on his tissue proteins. As a result, transfusions were no longer necessary, appetite returned, the patients' outlook was transformed and they put on weight. In no case treated by these two acridines was there a gravitational abscess, secondary hæmorrhage, or any cellulitis. Absolute bacteriological sterility was very seldom obtained, but the absence of pus, flabby granulations, and other clinical signs of infection was striking.

Applied in powder form to a grossly suppurating wound or to an abscess cavity both these acridines produced immediate and remarkable improvement, but a coagulated lymph pellicle always formed, and destruction of the epithelialising edge was constant. If used with sulphanilamide powder (1 in 10 to 1 in 40) these effects were less noticeable, owing to the dilution. It may well be that in these mixtures the immediate bacteriostatic effect of the acridine inhibits the formation of *p*-aminobenzoic acid (1 part of which throws out of action 10,000 parts of sulphanilamide), and hence the bacteriostatic effect of sulphanilamide comes into play while the bactericidal effect of the acridine is developing—a process which takes up to two hours to make itself manifest.

METHODS OF APPLICATION

The most efficient method of applying acridines in solution was by slow-drip irrigation. The degree of sepsis determines the procedure.

In cases of gross established infection the wound is irrigated with saline or peroxide to clear obvious purulent exudate. Then it is swabbed out with the acridine solution and one or more Carrel tubes are placed so that they reach the depths. The tubes are held loosely in position with a light packing of paraffin gauze and overall firm cotton-wool pads and bandage. Each tube is connected to a separate 'Soluvac' or other convenient drip-bottle and the rate of flow is regulated to about 20 drops per min. As soon as the fluid permeates the outer dressings the flow is reduced so that they shall be damp but not wet. The drip is allowed to flow for only 4 hours in each day. The whole dressing is changed every second or third day, the wound being cleaned and the tubes sterilised and replaced. Once the free flow of exudate has been controlled the drip is run for only 2 hours daily and re-dressings are necessary only every 3rd or 4th day. The reason for limiting the time of flow of the solution is that acridines persist in wounds and tissues for a considerable time, thus differing from most other antiseptics (e.g., hypochlorites) which quickly become exhausted.

If the wound closes in to a sinus, or to a clean saucerised healing area, we use an acridine emulsion, made as follows:—

Mix together—(1) arachis, maize or olive oil .. 50 parts
(2) water .. .. .. 25 ,,
(3) liq. calcii hydrox. sacch. (*BPC*) 5 ,,

Then add the selected acridine (0·05 part dissolved in 20 parts water) and mix well.

The result is a creamy durable emulsion whose watery phase contains 0·1% of the acridine. It is injected into sinuses or poured on to open wounds, which are then covered with paraffined gauze.

To prevent secondary infection the whole of the skin round wounds on which dressings or bandages are to be applied is rubbed over with greaseless ointment (the acridine 0·1 g.; starch 1·5 g., boiled with water to secure a cream; tragacanth 1·5 g.; glycerin 50·0 ml.; distilled water to 100·0 g.). Also the recommendations of the Medical Research Council's Memorandum no. 6 on *Control of Hospital Infection* should be fulfilled as far as may be practicable—particularly the masking of patients and dressers and the period of quiescence in the ward for at least half an hour before dressings commence. With a good team of dressers it is surprising how quickly the procedures can be carried out efficiently. The patients take a keen interest and can often be left to control the rate of drip for themselves. Since the inception of irrigation with 5-aminoacridine, the nursing staff have liked to work in the septic ward, because there is always something doing and because they see quick results; whereas formerly these wards were anathema to all.

In the facio-maxillary section 5-aminoacridine with sulphanilamide (1 in 10 to 1 in 40) has become the standard preparation for all wounds requiring plastic operations, because results have far surpassed those of other preparatory forms of treatment. In reconstructive work about the mouth and face, the fear of sepsis is almost a thing of the past. The powder is of particular value in clearing a granulating surface of sulphonamide-resistant organisms; but it should not be used for three or four days before skin-grafting, which would be hindered by any trace of lymph coagulum.

In recent wounds, especially with compound fractures, results with the combined powder have been dramatic. The major factor in necrosis of bone seems to be the toxins of staphylococci, especially those forming coagulase. 5-aminoacridine seems to have a special affinity for hæmolytic and coagulase-forming staphylococci, and wounds subjected to debridement within 5 or 6 hours of the injury and then closed by primary suture after application of the combined powder have healed without any pus formation or necrosis of bone. Where there has been much destruction of soft tissues plastic procedures can be carried out within a week or two, thus allowing treatment to be that of a simple fracture. We have been particularly interested in the rapidity of callus formation and the solidity of bone repair after the use of 5-aminoacridine and are investigating the possibility that this substance actually stimulates osteogenesis.

RESULTS

A total of 24 patients with severe gunshot wounds of bones and long-standing sepsis have been treated. All showed surprisingly good results except one man who had complete necrosis of the lower half of his tibia with septic arthritis of the ankle-joint and a mixed infection including gas-forming anaerobes. Here the profuse purulent discharge cleared under 5-aminoacridine but as the limb was thought to be of no further use it was amputated.

In 70 other cases 5-aminoacridine has been used prophylactically, mainly with sulphanilamide in the facio-maxillary unit, with only 2 failures. In 1 the patient developed a streptococcal infection around a tube pedicle graft, but it did not break down. In the other suppuration developed in a plastic operation for a large facial defect. The combined powder was also used in 10 general cases of major character, with success in all except a case of secondary nephrectomy for pyonephrosis which suppurated but cleared with irrigation.

This makes a total of 104 cases treated at the base hospital. In other hospitals 16 major cases have been treated with 1 failure in which the combined powder was used during closure of a cæcostomy which broke down a week later. Thus the number of cases treated is 120 and immediate control of sepsis was secured in all but 5. The following are a few examples:—

CASE 1.—Pte. A, on Nov. 7, 1942, sustained a gunshot wound of the left buttock and thigh, with fracture of the ischium and of the left femur in its upper third and a lesion of the sciatic nerve. He arrived at the base hospital on March 19, 1943, when a large abscess in the thigh was evacuated. A fortnight later a blood-transfusion of 800 c.cm. was given. Free purulent discharge continued, and major

dressings had to be carried out under 'Pentothal' anæsthesia. Carrel-Dakin irrigation was begun on May 12 and some local improvement took place, but he needed a second blood-transfusion on May 28. On June 12, when irrigation with 5-aminoacridine (monacrin) commenced, he had a mixed infection of staphylococci, streptococci, pyocyaneus, proteus and gram-negative bacilli. Under the new treatment discharge of pus diminished rapidly, and when 2% acetic acid was added the pyocyaneus infection disappeared. Although the wound was healing quickly a few staphylococci could be cultured up to the end of August, but healing was complete early in October. Firm bony union developed and he was discharged from hospital in November.

CASE 2.—Pte. B was wounded on Sept. 15, 1943, and arrived at base hospital on Oct. 7. He had a large open wound over the right iliac crest with much bone loss and gross sepsis. On Oct. 12 the whole of the iliac bone was removed and the cavity dusted with monacrin. Carrel tubes were placed in position and the edges were approximated with a few wire sutures. He was given 1000 c.cm. of blood. Irrigation with 1 in 1000 solution at a slow drip for 4 hours daily continued for 12 days, after which the tubes could no longer be kept in place owing to the rapid healing. Cultures were then sterile. A few days later a pyocyaneus infection developed around the wire sutures, but this cleared upon their removal and the application of moist dressings with 2% acetic acid in monacrin solution. Healing was complete by Oct. 31—i.e., in 24 days.

CASE 3.—Cpl. C was wounded on Jan. 9, 1943; the missile passed through the left buttock and the abdomen, then shattered the right acetabulum, the head of the femur, and the great trochanter, leaving a huge gaping wound on the anterolateral aspect of the right hip. He arrived at the base hospital about three weeks later, very emaciated. The wound had to be dressed 12-hourly, when 2–4 oz. of pus could be aspirated. Up to May 18 four operations for removal of sequestra and general debridement were performed and 3600 c.cm. of blood was given in four transfusions. Discharge of pus was still copious and the general condition poor. Irrigation with 1 in 1000 monacrin began on June 12, when the infecting organisms were staphylococci, streptococci and pyocyaneus. Improvement was almost immediate. Purulent discharge ceased after the first week, the wound surface showed bright, firm granulations, and the hæmoglobin steadily rose. As pyocyaneus appeared 2% acetic acid was added from time to time. The enormous raw surface healed rapidly and two months later only a small clean healing sinus was left. At no time were any exuberant or flabby granulations seen during treatment with monacrin, although previously they had been a feature of the case. In January, 1944, healing was complete and he had firm bony union between the upper end of the femur and the acetabular area.

CASE 4.—Pte. D had a very severe gunshot wound on Dec. 26, 1942, involving the right knee-joint and exposing the medial condyle. There was gross infection when he arrived at the base hospital a month later. Because of the extent of the wound and the great pain, dressings were carried out only once in 4–8 days, under pentothal anæsthesia, for the first six or eight weeks. In the succeeding six months he had four operations to drain abscesses and remove sequestra including the medial condyle of the femur. The chief infecting organisms were streptococci, staphylococci, and pyocyaneus. Irrigation with monacrin 1 in 1000 was started on June 12 through Carrel tubes into three sinuses, using a slow drip for 4 hours every 48 hours. One sinus had healed by July 19 and the other two by Sept. 16.

CASE 5.—Pte. E was wounded in the left knee, the lateral condyle and surrounding soft tissues being destroyed. He had been treated in hospital for 18 months but the wound would not heal and amputation was considered. There was an indolent ulcer 5 cm. wide with mixed infection of staphylococci, hæmolytic streptococci and gram-negative bacilli. A light dusting of monacrin powder was applied and covered with paraffined gauze. After 48 hours moist dressings of the 1 in 1000 solution were put on daily for 2 hours and then paraffined gauze. The wound was sterile by the 5th day and had healed at the end of 6 weeks.

The above 5 cases all had extensive bone involvement and in 4 of them suppuration had continued for months under ordinary treatment. In case 2, where the wound was recent, healing under 5-aminoacridine was complete in 24 days, and the others were cured within a few months. Judging by results both in the last war and this war, these cases might have dragged on for as long as two or three years in the absence of acridine treatment.

The three following cases illustrate other applications of 5-aminoacridine.

CASE 6.—Mrs. E developed a right subphrenic abscess as part of a generalised staphylococcal infection following a boil on the face. Free drainage persisted for 2 months and there was still a large cavity. Daily irrigation with 1 in 2000 monacrin was commenced. Six days later discharge had ceased. After 3 weeks only a narrow sinus remained and this healed firmly during the 6th week. The infecting organism was a hæmolytic staphylococcus.

CASE 7.—Mrs. F had a toxic goitre and was admitted to hospital for operation. She was found to have an acute inflammatory condition in the pubic area which rapidly extended into the labia majora. The condition was not the usual folliculitis but rather a cellulitis. Under anæsthesia free incisions were made through necrotic tissue, which was scraped away, and the whole area was laid well open. Monacrin powder was dusted into the wounds and paraffin gauze applied. After 48 hours, irrigation with the 1 in 1000 solution was carried out daily. Healing was complete in 10 days, and 4 days later subtotal thyroidectomy was performed. Convalescence was uneventful. Again the organism recovered was a pure culture of hæmolytic staphylococcus.

CASE 8.—Mrs. G contracted lobar pneumonia when 6½ months pregnant. A fortnight later 20 oz. of turbid fluid was aspirated from the chest, and three further aspirations at 7–10 day intervals were required, with the fluid becoming more purulent. Pure cultures of pneumococci were obtained on each occasion. Three days after the last aspiration labour set in and the delivery was uneventful. Ten days later 15 oz. of thick pus was aspirated and thoracotomy was carried out. A large cavity was found and all exudate removed. Monacrin with sulphanilamide (1 in 10) was introduced and rubbed well over the whole cavity. Negative-pressure drainage was instituted and maintained for 17 days, when radiography showed the lung well expanded. The tube was removed and healing was complete 5 days later when she left hospital, just 3 weeks from the day of operation.

SUMMARY

The advantages and disadvantages of acridines for the treatment of wounds are reviewed. Acriflavine should no longer be used, and the acidity of proflavine sulphate *BP* should be corrected before it is applied.

Experimentally, 5-aminoacridine and 2:7-diaminoacridine have advantages over proflavine. Their trial in 120 cases, including 24 suppurating gunshot wounds of bone, has given very good results. In all but 5 cases sepsis was immediately controlled. For general use in wards 5-aminoacridine is preferred because it does not stain fabrics and tissues.

Where there is gross established sepsis, the wound may be irrigated with an aqueous solution of 5-aminoacridine (1 in 1000) through Carrel tubes. For other purposes an emulsion may be made, or the acridine, in powder form, may be mixed with sulphanilamide (1 in 10 to 1 in 40). Recent wounds associated with compound fractures have been treated with this powder after debridement and then closed by primary suture.

5-aminoacridine seems to be particularly effective against hæmolytic staphylococci and appears to favour bone repair.

My thanks are due to the Director-General of Medical Services, Australian Military Forces, for permission to publish this article; to Brigadier W. A. Hailes, director of surgery, for allowing me to carry out the clinical trials and for his interest in the work; to Dr. Adrien Albert, and to Mr. Robinson of Bayer Pharma Pty Ltd., for advice and supplies of this acridine; and to Lieut.-Colonel K. Starr and the officers of the Australian base hospital who so conscientiously carried out the bacteriological and surgical details.

REFERENCES

Albert, A. and Gledhill, W. (1943) *Lancet*, ii, 238; (1944) *Ibid*, i, 759.
Mitchell, G. and Buttle, G. (1942) *Ibid*, ii, 416; (1943) *Ibid*, ii, 287; Official History of the War (1922) Medical Services, vol. I, pp. 280–286.
Ungar, J. and Robinson, F. A. (1943) *Lancet*, ii, 285.

THE TALOCALCANEAN ARTICULATION

F. WOOD JONES, D SC LOND., F R C S, F R S
PROFESSOR OF ANATOMY, UNIVERSITY OF MANCHESTER

IT appears to be the almost universal belief of those who present themselves for examinations in anatomy that the movements of inversion and eversion of the foot take place mainly, or even solely, at the midtarsal joint (articulatio tarsi transversa). This belief is evidently the very natural outcome of assimilating the erroneous descriptions of the subtaloid joint (articulatio talocalcanea) that are prevalent in our textbooks.

The inaccuracy of the current descriptions of this joint is probably due (as is often the case) to an initial misunderstanding in nomenclature. It is a perfectly correct statement that the "talus is bound to the calcaneus by a strong interosseous ligament that occupies the sinus tarsi." But it must be remembered that the sinus tarsi is not a synonym for the canalis tarsi. Running across the upper surface of the talus and the under surface of the calcaneus are grooves—the sulcus tali and sulcus calcanei. By Henle (1871) these were rightly termed the "sulcus interarticularis tali et calcanei," and, when the bones are in natural apposition, the sulci complete the canalis tarsi. The canalis tarsi opens out at its forward and outward end into the wide bay of the sinus tarsi. The true interosseous talocalcanean ligament *does* occupy the sinus tarsi proper but it is not situated in the canalis tarsi in which our modern standard textbooks now locate it.

There is great confusion in nomenclature concerning the ligaments that bind the talus to the calcaneus and it is desirable to attempt some clarification of the terminology. It was well known to all the earlier anatomists that no strong interosseous bond occupied the canalis tarsi, and comparatively recently (1896) Barclay Smith has very rightly emphasised this point. The canal is bounded in front and behind by the articular capsules of the anterior and posterior talocalcanean articulations. The anterior part of the capsule of the posterior articulation was described as a special ligament by Toldt and named inappropriately "ligamentum talocalcaneum anterius." This term has introduced confusion in textbook teaching and though retained by both BNA and "Birmingham" systems of nomenclature, it should be deleted. It is to be noted that though the authors of the BNA explained the meaning of the term in their appendix, those responsible for the Birmingham revision incorporated the misleading name without any explanation, with the result that there appears to be no general agreement as to what ligament is designated by the term.

In addition to the anterior part of the capsule of the posterior talocalcanean articulation and the posterior part of the capsule of the anterior joint, the canalis tarsi is occupied by a quantity of fatty tissue in which ramify branches of the arteria et vena sinus tarsi. Such ligamentous tissue as occupies the canalis is derived from the ultimate attachment to the calcaneus of the deep portion of the fibular sided stem of the inferior extensor retinaculum (ligamentum cruciatum cruris). This part of the extensor retinaculum was described by Retzius in 1841 under the name of "schleuderformig." To French anatomists it has long been known as the "ligamentum frondiforme." The few British textbooks that have made any mention of it have usually termed it the "ligamentum fundiforme." If it is to have a common English name it might perhaps be known as the "sling" ligament, since it forms a sling for the extensor tendons, mainly for those of the extensor digitorum longus.

The deep fibres of this ligament that pass into the canalis tarsi are anterior to the so-called anterior talocalcaneal ligament and are often inappropriately designated (Fick in Bardeleben, and others) as "ligamentum talocalcaneum interosseum pars posterior"—a redundant and misleading term which should also be deleted. The true interosseous talocalcanean ligament that occupies the sinus, but not the canalis, tarsi is a discrete and powerful bond that passes from the underside of the neck of the talus downwards and backwards to the upper surface of the neck of the calcaneus. This is the ligament designated by Fick and others as "ligamentum talocalcaneum interosseum pars anterior." The attachment of this strong ligament is made to the two bones at the site of two well-marked tubercles. These tubercles are sufficiently conspicuous to have been depicted in the drawings illustrating most textbooks, but they have escaped description and appear to have had no name bestowed upon them. In the figures given here they are indicated as "tubercula cervicis tali et calcanei" and the ligament attached to them is designated "ligamentum cervicis" (= ligamentum talocalcanean interosseum pars anterior of Fick). Immediately to the tibial side of the tuberculum cervicis calcanei is the attachment of the conjoined stem of the ligamentum bifurcatum.

When it is realised that there is no strong and continuously elongated interosseous ligament binding the talus to the calcaneus over the whole length of the canalis tarsi, it is easy to appreciate the fact that movement between the two bones is free. The additional knowledge that the actual bond between the talus and

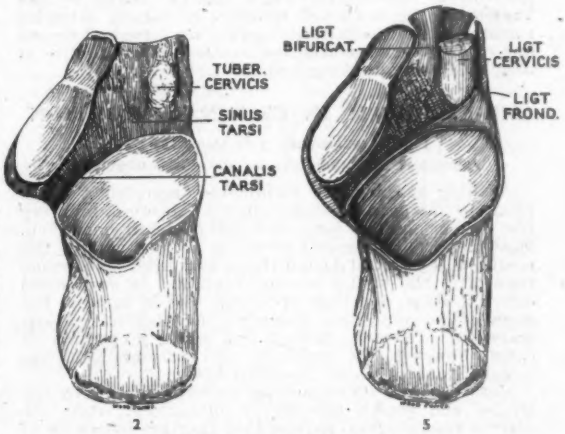


Fig. 2—The upper surface of the right calcaneus.
Fig. 5—The upper surface of the right calcaneus with attached ligaments.

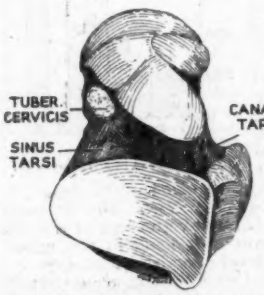


Fig. 1—The lower surface of the right talus.

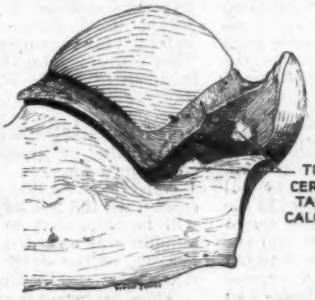


Fig. 3—The fibular aspect of the right talus and calcaneus in natural apposition.

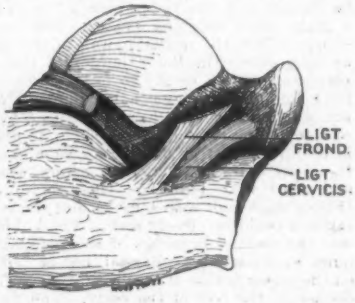


Fig. 4—The ligaments of the sinus tarsi.

calcaneus is a discrete ligament (ligamentum cervicis), joining their respective necks between the forward extremities of their anterior and posterior articulations, makes it easy to understand how the foot is, so to speak, hung in gimbals between the supratalaoid and infrataloid joints. At the supratalaoid (ankle) joint the foot moves up and down in extension and flexion. At the subtaloid (talocalcaneal) joint it turns inwards and outwards (inversion and eversion) and the ligamentum cervicis is the pivot round which this complex rocking and screwing side-to-side movement takes place. Without this knowledge the beautiful reciprocally curved articular surfaces of the talocalcaneal joints are meaningless and one of the most essential mechanisms of the foot is in danger of going unrecognised.

AIR-EMBOLISM IN CRIMINAL ABORTION

DONALD TEARE, MB CAMB., MRCP
ASSISTANT PATHOLOGIST, ST. GEORGE'S HOSPITAL

As long ago as 1859 Swinbourne reported a death from air-embolism following criminal abortion, but very few such cases have been described in detail since then. Most deaths in criminal abortion are, of course, the result of sepsis and hæmorrhage and take place some time after the actual instrumentation. In such cases decomposition, generally speaking, sets in rapidly, the gases of decomposition rendering the diagnosis of air-embolism extremely difficult. A small proportion of cases, however, die suddenly and air-embolism was found in one of these, described below.

Most criminal abortions are performed between the second and fourth months of pregnancy, when the uterine vessels are so narrow that they are incapable of carrying a sufficiently large quantity of air to the heart to cause death. Recently there seems to have been a swing in favour of the ordinary enema syringe or douche as an instrument of abortion, and it is by such means that air in the form of froth can be introduced into the pregnant uterus under considerable pressure. The volume of fluid expelled at one squeeze of an ordinary enema syringe is approximately 43 c.cm. and into an enclosed space it is delivered at a pressure which easily reaches 28 cm. of mercury or 380 cm. of water. Using a manometer in which various degrees of artificial leak can be produced the same figure of 28 cm. of mercury can easily be reached in two or three squeezes. When the ball-valve end of a syringe was dipped into the froth of soapy water it was found that about 25 c.cm. of air passed through the syringe for every squeeze of the bulb.

CASE-REPORT

An unmarried girl of 18 found herself to be pregnant, and told her sister of her condition. A few days later the sister was discussing this unfortunate affair in a food queue when a woman, Mrs. M N, overhearing the conversation, offered to help, and next day the girl attended Mrs. M. N's house. According to Mrs. M. N's subsequent statement, the girl went blue and suddenly collapsed almost immediately after the introduction of soap and water into her vagina by means of an enema syringe. The police were immediately called and the doctor who arrived fifteen minutes later found the girl dead.

The girl had represented herself as being three months pregnant, but at autopsy the uterus was found to be enlarged to the size of a five to six months' pregnancy and contained a male fœtus weighing 17½ oz. The membranes had been stripped from the posterior wall of the uterus up to a point an inch above the lower border of the attachment of the placenta. In the cavity so formed was found a quantity of froth and fluid which was in immediate contact with the uterine wall and the placental site. The placental site was seen to contain vessels up to 0·5 cm. in diameter. The blood in the upper part of the inferior vena cava, the right side of the heart and the pulmonary artery was found to be pink and filled with bubbles. These bubbles had the typical shining surface of soap bubbles and the rainbow effect of the saponin could be clearly seen. The bubbles could be traced into the smaller branches of the pulmonary artery and the lungs were partially collapsed, but no bubbles were detected on the systemic side of the circulation. There was no organic disease in the rest of the body. The fœtal membrane had not been ruptured.

The presence of soapy froth in the blood-vessels excludes the possibility of decomposition being responsible for the air in the pulmonary artery and helped to demonstrate the path taken by air in the form of froth from the uterine vessels to the pulmonary artery.

My thanks are due to Dr. Alan Cogswell, HM coroner for the Eastern Division of Middlesex, for permission to record the case.

ESTIMATION OF THIOURACIL IN URINE

A. B. ANDERSON, PH D CAMB., MRCS
CLINICAL BIOCHEMIST, GLASGOW ROYAL INFIRMARY; LECTURER IN PATHOLOGICAL BIOCHEMISTRY IN GLASGOW UNIVERSITY

THE method of Campbell, Landgrebe and Morgan (1944) for estimation of thiourea in urine is not applicable to thiouracil. Danowski (1944) gives a colorimetric method for the estimation of thiourea with Grote's (1931) reagent, and I have found this suitable for thiouracil.

From a standard solution of 100 mg. thiouracil in 1000 ml. distilled water, dilute standards are prepared containing 1, 2 and 3 mg. per 100 ml. To 10 ml. of each solution in a test-tube 1 ml. of the diluted Grote's reagent is added, and the bluish-green colour which develops is read after 1 hour in a photoelectric colorimeter against a control containing reagent and water only. Using the photoelectric colorimeter described by Bell (1943) and a Chance glass red filter, a straight-line graph is obtained with solutions containing from 0·5 to 4 mg. thiouracil per 100 ml. The position of the line varies slightly from day to day owing to changes in the reagent, which is not stable and deteriorates after 10 days. Standards must therefore be prepared and a line drawn for each batch of estimations.

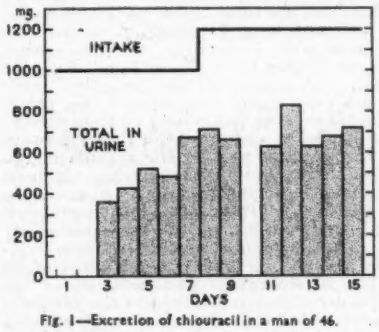


Fig. 1—Excretion of thiouracil in a man of 46.

The urine, which may be preserved with chloroform, is diluted 25 times with water; to 10 ml. of diluted urine 1 ml. of the diluted reagent is added, and at the end of 1 hour the colour is compared with the standards prepared simultaneously.

Weighed amounts of thiouracil dissolved in dilute ammonia solution and added to urine were recovered with an error of not more than 5%. Grote's reagent is not specific for thiourea and thiouracil, and gives a blue colour with compounds containing the group C=S; but a number of pathological urines not containing thiouracil have been tested with it after dilution 10 times with water, and in no case has any trace of blue or green been observed.

The excretion of thiouracil has been followed in two patients under treatment for hyperthyroidism by Dr. David Smith, to whom I am indebted for the opportunity. They were receiving thiouracil in doses of 1·0 to 1·2 g. per day. The urine was collected as completely as is possible in a large medical ward, and the results of analysis are shown in the figures. In case 1 collection of urine did not start until the 3rd day of administration of the drug. It will be seen that in these two patients only a small amount was excreted at first, but by the end of a week 60–70% of the daily dose was appearing in the urine. Excretion remained at this level on subsequent days.

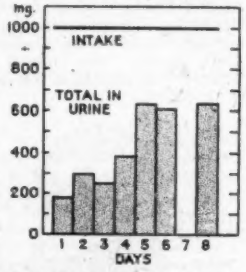


Fig. 2—As above in a woman of 36.

Total excretion is calculated on the assumption that all the compound giving the reaction is unchanged thiouracil,

and this remains an assumption until the compound has been isolated from the urine. It is not excreted as thiourea, because the urine in case 2 was completely negative when tested for thiourea by the method of Campbell et al.

REFERENCES

Bell, G. H. (1943) *J. sci. Instrum.* **20**, 145.
Campbell, D., Landgrebe, F. W., Morgan, T. N. (1944) *Lancet*, **i**, 630.
Danowski, T. S. (1944) *J. biol. Chem.* **152**, 201.
Grote, I. W. (1931) *Ibid*, **93**, 25.

THE ORTHOPÆDIC ANÆSTHETIST

B. G. B. LUCAS
MRCS, DA
SQUADRON-LEADER RAFVR

I. A. G. L. DICK
MD EDIN., FRCS
WING COMMANDER AAF

From an Orthopædic Unit at a RAF General Hospital

IN orthopædics more than in any other branch of surgery coöperation between the surgeon and the anæsthetist is essential if good results are to be obtained. The anæsthetist must be prepared to carry out several other duties besides that of actually anæsthetising the patient. In fact, beyond the selection of suitable agents and technique, the problem of anæsthetising the orthopædic patient is very simple.

The duties of the orthopædic anæsthetist come under two distinct headings: those associated with the comfort and general fitness of the patient, before, during and after the operation; and those associated with the operation itself.

The operation is but a small part of the orthopædic treatment of any one patient; its importance should not be overstressed lest the patient believe that it will cure his condition, not, as is actually the case, help him to make himself well. Before the operation the patient's morale and general health, apart from the orthopædic condition, are usually good. It should be the policy of the operator and his team to see that this high standard is maintained, if possible, without any deterioration, however temporary. Once he has had an operation the average patient thinks that he is entitled to be ill for several days at least. This wastes valuable time in orthopædics, and the way to prevent it is to show the patient that his operation is only an incident. Thus a patient who has had an open reduction of a fractured forearm, on returning from the theatre, should find, after resting for a while, that apart from some pain he is as fit as he was the day before. If this can be achieved, the patient will become completely coöperative, since the operation has been no more disturbing to him than at best a haircut and at worst a visit to the dentist.

If he is to be disturbed as little as possible, it is important that the anæsthetic chosen should be not only pleasant but also as free as possible from toxic after-effects. This may impose limitations on the surgeon while he is actually operating, but in the end the patient will benefit. All things being equal, it is the surgeon who should put up with discomfort in the operating theatre, rather than the patient.

Deep general anæsthesia is by far the easiest and best from the surgeon's and the anæsthetist's points of view. Almost any doctor is capable of keeping a patient unconscious for two hours or so with ether or chloroform, without the exercise of much skill or trouble, and during this time operative conditions from the surgeon's point of view are ideal. To many doctors and even some surgeons it is of small moment that the patient's condition during the next three days may be anything but ideal from his own point of view. Another reason why the induction and after-effects of the anæsthesia should be pleasant is that it is often necessary in orthopædic surgery to anæsthetise the same patient several times. Unless the effects of the first anæsthetic have been pleasant, one cannot expect him to view subsequent operations with anything but terror.

At this unit it has been customary to work in accordance with four broad principles, discussed here under the headings of premedication; induction and maintenance of anæsthesia; posture; and postoperative sedation.

PRINCIPLES OF COMFORTABLE ANÆSTHESIA

Premedication.—To allay any mental worries on the part of the patient some form of premedication is always used. Two main combinations are employed, depending on whether the operation is being done under general or regional anæsthesia. For general anæsthesia, 'Nembutal' or 'Seconal,' grains 1–3, is given the night before operation to ensure a good night's sleep. An hour before operation, 'Omnopon,' gr. ½–¾, and scopolamine, gr. $\frac{1}{300}$–$\frac{1}{150}$, are given subcutaneously. This combination of drugs, given in doses compatible with the patient's weight and general condition, will usually produce a state of mental comfort before the operation.

For regional anæsthesia a somewhat heavier premedication is used. In place of the nembutal or seconal, chloral hydrate, gr. 10–30, is given at night, and this dose is repeated three hours before the operation. Then omnopon and scopolamine are given as before. These patients usually reach the anæsthetic room conscious and coöperative, but are very drowsy and almost invariably fall asleep during the operation.

Induction and maintenance of anæsthesia.—Whenever possible regional anæsthesia is used. Sometimes this is supplemented by very light nitrous oxide and oxygen; as for example, in operations for recurrent dislocation of the shoulder-joint when brachial and cervical plexus blocks are done, and then light unconsciousness is produced to spare the patient any discomfort brought about by his posture or the manipulations of the surgeon.

The regional blocks most commonly used are the brachial plexus, cervical plexus and popliteal nerve blocks. Sciatic nerve blocks have not proved completely satisfactory, but unilateral low spinals are occasionally used. For the upper limb, brachial and, if necessary, cervical plexus blocks are used almost without exception, but for the lower limbs, unless a popliteal nerve block can be employed, general anæsthesia is commonly used.

Spinal anæsthesia for the lower limbs has two disadvantages in orthopædic surgery. The analgesia may only last a short time, but there is often a diminution of muscle tone lasting several days, and this, from the point of view of postoperative leg exercises, is far from ideal. Secondly, spinal anæsthesia is not entirely free from after-effects. Many patients complain of postoperative headache or backache for a few days; these may be mild or severe, but in any case they do not add to the patient's postoperative comfort and tend to centre his thoughts around his operation, which should be avoided at all costs.

If general anæsthesia is being employed, postoperative nausea and vomiting are minimised by avoiding any of the lipoid-soluble anæsthetic agents such as ether or chloroform. An intravenous barbiturate is always used to make the induction as pleasant as possible, and this is supplemented by nitrous oxide and oxygen. If this is not sufficient more barbiturate is added from time to time, though this is rarely necessary. The minimum of barbiturate is always used to prevent the recovery time from being prolonged. With this technique one's aim is to have the patient conscious or semiconscious by the time he leaves the theatre.

A third method of anæsthesia is used for certain closed manipulations such as the reduction of a fractured spine. Local anæsthesia is very unsatisfactory for this operation, and general anæsthesia is not only often difficult for the anæsthetist but does not make for good operating conditions for the surgeon.

The principle employed is to reduce the patient to a state of what might be termed intoxicated coöperation with the aid of phenobarbitone and omnopon. This reduction is started 24 hours before the manipulation, with phenobarbitone gr. 1–3 repeated every four hours. An hour and a half before operation omnopon, gr. ½, and scopolamine, gr. $\frac{1}{150}$ are given subcutaneously; fifteen minutes before the manipulation firm pressure is applied with the hand over the site of fracture. If this evokes more than discomfort, more omnopon is given intravenously, after which the manipulation can be carried out.

This technique of intravenous omnopon is also used for changing plaster, particularly for shoulder spicas where a conscious patient is an asset, whereas an unconscious one is a liability.

For very short manipulative procedures, where good relaxation of muscles is required, a small dose of a barbiturate—usually 'Pentothal Sodium'—is injected rapidly into a vein before the tourniquet is removed.

Never more than 6 c.cm. of a 5% solution is used. The needle is then withdrawn, the tourniquet removed and the patient is instructed to clench his hand several times. Almost immediately a short but deep anæsthesia results. With this technique and dosage the recovery time is extremely short.

Posture.—Correct posturing of the patient is of great importance in orthopædic surgery, not only for the benefit of the surgeon but also for the comfort of the patient. Under local anæsthesia a patient will only remain quiet and coöperative if he is completely comfortable. Unfortunately the average operating table, even with a 'Sorbo' rubber mattress, is hardly the ideal place on which to sleep. Before the operation begins the patient is asked if he wants to change his position, and his requests are granted as far as is possible. If because of the necessary posture for the operation the patient cannot be made comfortable, then a little pentothal or nitrous oxide and oxygen should be given to produce unconsciousness.

While the patient is under general anæsthesia, the anæsthetist must pay attention to the posture, so as to prevent mild postoperative aches. Hyperextension of the legs due to lying flat on the table will often cause pain in the back of the knees and ankles. This can be prevented by placing a pillow underneath the knees at the time of operation. Similarly, with a patient lying face downwards a certain amount of soreness around the pressure points of the anterior part of the body and the lower limbs may result if the operation is lengthy. This can be prevented by greasing all these pressure points with soft paraffin before placing the patient in this position.

During the operation a close watch must be kept to prevent the surgeon or his assistants leaning on the patient's chest. This is a small but important point; with a patient under general anæsthesia, it reduces the respiratory excursion, and when he is under local anæsthesia he often finds it a source of great annoyance.

Postoperative sedation.—When postoperative sedation is necessary—which is seldom—morphine is used in small doses. It is better to give it before pain has really developed, rather than to wait until the pain is such that a large dose is needed to control it. Some postoperative procedures—e.g., removal of the external meniscus of the knee-joint and operations involving the joints of the hands or feet—give rise to much more pain than others, and it is usually for these types of case that postoperative morphine is reserved. In our experience, routine postoperative sedation is a bad thing, encouraging laziness on the part of the patient.

OTHER DUTIES OF THE ANÆSTHETIST

The duties of the anæsthetist during the operation, apart from looking after and anæsthetising the patient, are largely a question of being an intelligent member of the orthopædic team and often an unsterile assistant. To obtain maximum efficiency in the operating theatre it is always desirable to have some person, other than the surgeon, whose job it is to supervise and coördinate the running of the theatre and the numerous other duties in connexion with the patient which have to be performed while the operation is in progress. In orthopædic surgery this is of even greater importance since the actual operating time, particularly if a tourniquet is being used, must be as short as possible and absolute sterility is essential. At this unit these duties are performed by the anæsthetist, so that the surgeon, while actually operating, is freed from all responsibility outside the operation field itself.

To save time the anæsthetist applies the tourniquet. Whenever possible a pneumatic one is used, inflated to a pressure of 20 mm. Hg more than the systolic blood-pressure. This pressure is applied rather than a standard 200 mm. Hg to minimise the chance of tourniquet palsies. A number of cuffs of varying size has been made from the inner tubes, suitably covered, of cycle, motor-cycle and motor-car tyres, and the widest possible is used on every case. The skin is prepared by means of a spray gun. This consists of a de Vilbiss spray with an extra large reservoir, pressure being supplied by the oxygen cylinder on the anæsthetic machine by means of a tap with a quick-fitting nipple and a long length of rubber pressure tubing. This method not only saves time but also economises in the preparation fluid.

During the operation the anæsthetist's main secondary duty is the supervision of the surgical "no touch" technique. While the surgeon is operating his entire attention should be on his work and he is not always able to notice either his own or his assistant's faults. On the principle that the onlooker sees most of the game, the anæsthetist is in a position to watch the entire operation and can prevent any breakdown of the no-touch technique. Failures commonly occur at three stages. During the preliminary towelling the surgeon or his assistant may accidentally touch unsterile objects, such as the table, with his gown, particularly if rapid movements cause his gown to balloon out. Again when stockinette is being applied to a limb the skin may easily be touched in error. During the operation itself it is usually the assistant whose technique fails. There is a tendency when holding retractors for the hand to move gradually up the shaft of the instrument. Again the surgeon when being handed an instrument may inadvertently touch the forceps of the theatre sister. Finally, during control, radiography or the demonstration of interesting lesions to onlookers, the gowns of either the surgeon or his assistants may become contaminated.

Apart from these particular hazards, no-touch technique may break down at any time, and a watcher in the theatre can draw attention to any potential mistake, which can then be rectified before damage has been done.

SUMMARY

In orthopædic surgery coöperation between the surgeon and the anæsthetist is more essential than in other branches of surgery.

Orthopædic patients are usually fit before operation, and the anæsthetic technique should be employed to prevent or minimise any diminution in this fitness. This is best achieved by regional anæsthesia, supplemented if necessary by light general anæsthesia.

Particular attention must be paid to the patient's comfort during the operation, and the anæsthetist should be prepared to carry out other duties besides anæsthetising the patient—for example, he can apply the tourniquet and supervise the no-touch technique. This not only saves time but makes for greater efficiency.

PRIMARY TUBERCULOUS INFECTION IN NURSES

MANIFESTATIONS AND PROGNOSIS*

MARC DANIELS, MD PARIS, LRCPE, DPH

PROPHIT SCHOLAR, ROYAL COLLEGE OF PHYSICIANS OF LONDON

(*Concluded from p.* 204)

Appendix A

CRITERIA FOR DIAGNOSIS OF ACTIVE TUBERCULOSIS

This memorandum has been drawn up for the guidance of the Prophit scholars and the classification of cases in the report is based on it. The accepted categories were (A) Normal; (B) Clinically active pulmonary tuberculosis; (C) Latent subclinical pulmonary tuberculosis; (D) Pleurisy; (E) Healed pulmonary tuberculosis.

CLINICALLY ACTIVE PULMONARY TUBERCULOSIS

(*a*) *Bacteriological evidence.*—Although tubercle bacilli may rarely be expectorated by apparently healthy persons without any radiological evidence of pulmonary tuberculosis, the committee agreed that in the age-group dealt with under the Prophit survey the demonstration of tubercle bacilli should be regarded as evidence of active tuberculosis.

(*b*) *A combination of clinical and radiological evidence:*

1. Radiological evidence associated with evidence of toxæmia.

2. In the earliest stages of pulmonary tuberculosis, physical signs cannot usually be elicited. Though no standard criteria can be laid down, the presence of râles persisting after coughing, heard in the subclavicular and upper axillary regions, is the most reliable stethoscopic

* **An Interim Report of the Prophit Tuberculosis Survey.** In this report, for the sake of brevity, the words infection, morbidity, mortality and lesions, unless it is otherwise stated, may be taken to refer to tuberculous conditions.

finding. Radiological evidence of lesions type (*a*), (*b*), or (*c*) (see appendix B) associated with such physical signs of the chest should be regarded as being most suggestive of active tuberculosis. It is important to realise that active spreading lesions may appear suddenly in a lung which was radiologically clear a few months previously.

3. Radiological evidence—lesions type (*a*), (*b*) or (*c*)—associated with a history of recent hæmoptysis.

4. Radiological evidence—lesions type (*a*), (*b*) or (*c*)—accompanied by clinical evidence of pleurisy with or without effusion (see below).

LATENT SUBCLINICAL PULMONARY TUBERCULOSIS

Tuberculous lesions may also arise and persist in the lungs for many months or years without giving rise to obvious clinical manifestations. In the absence of clinical evidence it may be necessary to make a presumptive diagnosis on radiological findings alone.

Such lesions may be progressive or non-progressive.

(*a*) *Progressive.*—Cases in which serial films show the presence of an X-ray lesion suggestive of pulmonary tuberculosis which has persisted during a minimum period of 6 months and has either spread locally or has been associated with the development of further new lesions in other parts of the lung during a minimum period of 6 months.

(*b*) *Non-progressive.*

1. Cases in which a lesion suggestive of pulmonary tuberculosis, other than healed pulmonary tuberculosis (see below), remains stationary for a year or more, or recedes after a period of not less than 6 months but is still in evidence a year later.

2. Cases in which a small lesion suggestive of a primary focus, associated with the development of a positive tuberculin reaction, retrogresses or disappears completely within a few months.

Radiological evidence of pleurisy (see below) or a proved history of pleural effusion in association with any case in group (*a*) or (*b*) is additional evidence in favour of tuberculosis.

PLEURISY

(*a*) *Pleurisy with effusion.*—In the absence of other known causes a straw-coloured pleural effusion free from pyogenic organisms, and having a high lymphocyte content, may be considered as being probably of tuberculous origin. Its persistence, with signs of toxæmia, particularly continued pyrexia, affords almost certain diagnostic evidence of tuberculosis. Additional evidence may be contributed by knowledge of recent contact, or of recent change from negative to positive in the tuberculin reaction.

(*b*) *Pleurisy without effusion.*—In persons whose tuberculin reaction is known to have changed recently from negative to positive, "dry pleurisy" may be diagnosed by clinical findings alone; such diagnosis is confirmed if radiological evidence of pleurisy is subsequently observed, and may be regarded as probably of tuberculous origin.

In persons whose tuberculin reaction is known to have changed recently from negative to positive, the development of radiological evidence of pleurisy after a previous normal X-ray picture may be regarded, even in the absence of clinical findings, as a manifestation of tuberculosis.

HEALED TUBERCULOSIS

(*a*) Calcification of primary foci, or of hilar glands, or of both is evidence of healed primary tuberculosis.

(*b*) Lesions with appearances suggestive of healing may provisionally be considered as healed if no change, or only the later stages of retrogression (see appendix B, section *j*) are observed over a period of 3 years, and bacteriological investigations over the same period of time are negative.

Lesions in non-reactors.—A negative tuberculin reaction in any of the groups of cases dealt with in this memorandum, with the exception of a healed primary focus, should give rise to doubt as to the tuberculous nature of the lesion.

Appendix B

RADIOLOGICAL DIAGNOSIS OF PULMONARY TUBERCULOSIS

It is usually unwise to make a diagnosis of pulmonary tuberculosis on the evidence of a single film without corroborative, clinical or bacteriological, findings. Activity should never be presumed from a single picture and the term "active" should not appear in purely radiological reports. Progression or retrogression of lesions on serial films may be noted, but this is no guide to ultimate prognosis.

The committee considered that the use of the words "infiltration" and "node" is to be deprecated, as these terms are descriptive to some and to others interpretative. In X-ray reports generally it is advisable first to describe the opacities seen and then conclude with an interpretation of them.

The report *Radiological Appearances of Early Pulmonary Tuberculosis*, by Wing Commander R. R. Trail and Major Peter Kerley (MofH memo 208/med 1943), although it does not deal with some of the lesions with which the Prophit Survey is concerned may be found of considerable assistance in cases of difficulty. It is felt that the lesions defined in this interim report are impossible to illustrate by line drawings, but it is hoped that the final report of the survey will contain illustrative X rays to which reference may be made.

Four main types of abnormal opacity may be found in X-ray films of pulmonary tuberculosis:—

1. Small, discrete opacities, round, oval or rosette-shaped, usually with ill-defined margins.
2. More or less homogeneous opacities which give the impression of having been formed by the coalescence of discrete opacities.
3. Large homogeneous opacities.
4. Linear opacities.

Tuberculosis can be simulated by many non-tuberculous conditions but no matter what appearance is seen, except in the very earliest stages, somewhere in the film there will usually be discrete opacities of type 1. In the absence of these, a diagnosis of tuberculosis is doubtful. In the very earliest stages persistence of a small localised shadow is in favour of a diagnosis of tuberculosis.

The following are the common radiological appearances in pulmonary tuberculosis: †

(*a*) Multiple small, discrete pulmonary foci, each 2–5 mm. in size, usually not less than 5 clustered together, of even density, obviously not produced by blood-vessels, and usually in the upper lobe apex (apical tuberculosis).

(*b*) Oval or round homogeneous opacities varying from 0·5 to 3 cm. in size; fairly well-defined with a sharp edge (Assmann's focus), or with a hazy edge merging into the surrounding lung tissue. They are usually in the upper lobes (subclavicular), but they may occur anywhere. They are seldom more than 2 or 3 in number. When large, they are usually single. Increased striation radiating from the root of the lung to this opacity, is additionally suggestive of tuberculosis.

(*c*) An ill-defined opacity comprising multiple, discrete pulmonary foci of type 1, clearly visible and not generalised through both lungs.

(*d*) Superimposed on a basic picture of pulmonary tuberculosis, there may be appearances of cavitation, pleural involvement, atelectasis or fibrosis, or of coalescence to form large areas of consolidation. Combinations of various forms of the basic picture and of appearances of healing (vide infra) in different parts of the lung are common. Lesions at different stages of the disease may be seen in different parts of the lungs.

(*e*) The development of a pleural effusion, with a lesion of the lung parenchyma of one of the above types is strong evidence of pulmonary tuberculosis. Where no lung lesion is visible, tuberculosis would still be suspected. Pleural thickening at the costophrenic angle, or in the vicinity of the lesion, may become evident in serial films. Tenting of the diaphragm and extrinsic pleuropericardial adhesions may also appear (pleurisy).

(*f*) A localised, rather rounded focus, anywhere in the lung, but usually subpleural, sometimes associated with a small effusion and always with enlargement of a root gland, which

† *Note by Prophit scholar.*—In the interim report this classification is adopted with the following slight modifications:
Type (*b*) lesions: only circumscribed fairly well-defined shadows have been included in this group.
Type (*c*) lesions: in addition to the typical shadow described, other localised ill-defined opacities, to which this description does not fully apply, but which have been considered as probably tuberculous according to the standards in appendix A, have been included.

is not, however, always visible radiologically (in which case the possibility of a non-tuberculous cause should be considered). The original rounded shadow may be modified by an element of collapse or surrounding reaction. The original focus may be completely concealed by these changes, and it may be invisible behind the diaphragm, the mediastinum or the heart (primary tuberculosis).

(*g*) Single, or sometimes multiple, sharply defined, isolated, calcified foci in the lung field with calcification in the mediastinal glands (healed primary tuberculosis).

(*h*) A widespread if not universal appearance of type 1 opacities. In some cases there may be larger individual opacities (miliary tuberculosis).

(*i*) Ill-defined opacities (see type *c*), generalised through both lungs (bronchopneumonic tuberculosis).

(*j*) Calcification, fibrosis and resolution are evidences of healing. No radiological appearance is conclusive evidence of complete healing, though it may imply latency or quiescence (healed pulmonary tuberculosis).

Reviews of Books

Atlas of Anatomy

J. C. BOILEAU GRANT, MC, MB EDIN., FRCS, professor of anatomy in the University of Toronto. (Baillière. Pp. 214 and 390. 55*s*. the set of 2 vols.)

IT is a long time since we have had a manual of human anatomy in which all the illustrations are guaranteed to be drawn from the dissected human body. In the preface of this atlas, as well as in the figures themselves, we have this assurance. The atlas has been designed, with great care, to avoid the confusion found in most of our text-books where bilateral structures from the right or left sides are illustrated indiscriminately and often without explanation. Here all bilateral structures are depicted only from the right side of the body and the student has to undertake no mental gymnastics in re-orienting himself from one figure to the next. The artistic level of the illustrations is high, and they are supplemented by appropriate diagrams in clear outline. Colour has been employed discreetly to clarify rather than in any attempt at spurious attractiveness. Many little intimate details, which form a part of good routine dissecting-room teaching, are here given full expression; and in this respect some of the illustrations of cranial anatomy are specially noteworthy. Author and publisher are to be congratulated on so beautiful a production.

Health Education on the Industrial Front

1942 Health Education Conference of the New York Academy of Medicine. (Oxford University Press. Pp. 63. 8*s*. 6*d*.)

THE New York Academy of Medicine have rendered service to the cause of public health by setting up committees to study current problems and by supporting conferences on educational subjects. One of their chief aims is to find "devices that will shorten the time lag and close the gap between existing knowledge and newly discovered facts, and their practical use by our civil and industrial population." With this object in view the academy have sponsored this booklet, consisting of a series of short papers on war industrialisation, each written by a specialist in his subject. The main problems thrown up by war conditions are largely administrative and social rather than medical. The unhappy conjunction of overwork and absenteeism is only too prominent. Illness is responsible for 8–9 days' loss of work among male, and 12–14 among female industrial workers each year. On the whole, white workers stand up to the strain better than coloured people. There are of course wide variations between one industry and another, but everywhere the respiratory group of diseases is the greatest single cause of absence from work.

The authors of the book are not content with merely listing defects—they are at pains to suggest remedies, the first being the application of preventive medicine to industries both large and small, by means of a comprehensive medical and nursing service. The importance of a good environment is pointed out, but greater stress is laid on individual physical examination and the discovery of early symptoms of disease. A full account is given of mental health problems, and the functions of the industrial physician in maintaining a high level of morale. The final paper, an able exposition of the causes of accidents and the means of controlling them, sets out a well-balanced "syllabus of education" designed to reduce their number and severity. The foreword to this useful little book is written by Dr. Galdston, the indefatigable secretary of the Medical Information Bureau.

Common Skin Diseases

(7th ed.) A. C. ROXBURGH, MD, FRCP. (Lewis. Pp. 453. 18*s*.)

THE latest edition of this popular work has been brought right up to date. There is a good section on industrial dermatitis, and the chapter on scabies now includes the latest work on the subject. Treatment, with lethane cream and 'A.L. 63' powder, of head-louse and clothes-louse infestation is described. The chapter on avitaminoses which was somewhat vague in the last edition has now been clarified; some of Dr. Roxburgh's recent original work on penicillin in coccal infections of the skin has been included. The book is still printed on good paper and the new photographs are straight from the author's clever camera.

Blood-pressure and its Disorders

JOHN PLESCH, MD BERLIN, LRCPE, formerly professor of internal medicine in the University of Berlin. (Baillière. Pp. 149. 15*s*.)

Dr. Plesch again gives his views on blood-pressure and its variations in disease, based upon observations made with the tonoscillograph. This instrument has a recognised value in the investigation of blood-pressure and arterial disease, provided it is used with discretion as one item in a scheme of evidence. Dr. Plesch's deductions are already familiar to the expert and demand a background of physiological knowledge for their appraisal. The section on angina pectoris is interesting and provocative, the treatment advised ranging from large doses of vitamins A and D to Fowler's solution and the injection of Ringer's fluid into the pectoral muscle. A leavening of clinical acumen is dispersed in a book whose idiom makes it difficult to find.

Controlled Parenthood

REYNOLD H. BOYD, MB NZ, FRCS, consultant venereologist to the Essex County Hospitals. (Heinemann. Pp. 63. 3*s*. 6*d*.)

THIS small book is aptly and accurately described by the author as a practical handbook on birth control for the lay public. Simply written and to the point, it contains essential information, without any sentimental padding, about methods which Mr. Boyd considers efficient. The diagrams are easy to understand and it is well arranged with headings that catch the eye. Being so brief it is necessarily a somewhat dogmatic statement of its author's views, but within these limits he gives the reader the essentials of several well-recognised contraceptive methods and their relative safety. His lucid notes on the eugenic and hygienic reasons for contraception deserve special mention.

Operative Dental Surgery

(5th ed.) J. B. PARFITT, MRCS, LDS; W. E. HERBERT, MRCS, LDS. (Arnold. Pp. 408. 30*s*.)

ADDRESSED to both student and practitioner this is a well-written and well-illustrated book, covering all aspects of the technique of conservative dentistry. Recent advances, including the use of acrylic resins for restorations, are described and the newer modifications to the basic methods have been added. The chapter on pulpless teeth and their treatment is particularly good. The book can be confidently recommended to the student for its descriptions of standard methods, and to the graduate for its bibliography and its accounts of newer techniques of proven value.

Dr. ARTHUR MASSEY has been elected chairman of the Central Council for Health Education in succession to Dr. Charles Hill who has retired.

Air-Commodore T. C. MORTON has been appointed an honorary physician to the King in succession to Air-Commodore H. L. Burton who has retired.

AN IMPORTANT LOCAL ANAESTHETIC

● 'Anethaine' is a local anaesthetic with unusual and valuable properties, and is used in all forms of local anaesthesia.

In the effective dosage, the margin of safety is high. It has from 10-18 times more anaesthetic activity than procaine and is used in correspondingly lower concentrations.

Complete anaesthetic effect is of long duration, lasting from 1½ to 3 hours.

It has the very important property of high activity on surface application, and is thus the most suitable preparation for the anaesthetization of mucous membrane and wound edges prior to operative procedures or instrumentation, and in ophthalmology.

'Anethaine' is available in various packings for surface, infiltrative and spinal anaesthesia.

PACKS

Powder ... 1 *and* 5 *grams*
Solution 2% (*external*) ... 25 *cc.*
Solution tablets 10 × 0.1 *gram*
Ampoules (*Spinal*) 1% 6 *and* 100 × 2 *cc.*
Dry Ampoules (*Spinal*) ... 6 *and* 25 × 10 *mg.*
Dry Ampoules (*Spinal*) ... 6 *and* 25 × 20 *mg.*
Infiltrative (*Powder*) ... 3 *and* 25 × 100 *mg.*

ANETHAINE

BRAND OF AMETHOCAINE HYDROCHLORIDE

PRODUCT OF THE GLAXO LABORATORIES

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRon 3434

ADVANCES IN THE ARTIFICIAL FEEDING OF INFANTS

● The introduction of dried milk simplified and increased the safety of artificial feeding and has had a notable influence on infant health during the feeding period. Since that day, more than 35 years ago, there have been three notable advances, all embodied in Ostermilk :

(a) **the development of a 'humanised' formula, as that of Ostermilk No. 1,**

(b) **the addition of iron and vitamin D, as in both Ostermilk No. 1 and No. 2,**

(c) **the reduced cost achieved in 1928 when means were found to halve the price of dried milk food without impairing quality.**

Ostermilk is a roller-dried milk food of standardised composition ; it is bacteriologically safe and contains added iron and vitamin D. Ostermilk No. 1 with reduced fat and protein and an increased lactose content is suitable for infants up to three months ; Ostermilk No. 2 is a full cream food for older infants.

When breast-feeding fails, it can be safely supplemented with or replaced by Ostermilk.

PRODUCT OF THE GLAXO LABORATORIES

OSTERMILK

Ostermilk No. 1 (fat-modified) Ostermilk No. 2 (full-cream)

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRon 3434

Gentle, Palatable & Efficient

Lixen is an extract of senna pods prepared by a special cold process to allay the griping action. The absence of an after-constipating effect gives it a special value in habitual constipation, and its gentle, though efficient, action, together with its pleasant flavour, makes it particularly acceptable to women, children, elderly and delicate persons, and convalescents, for whom the finding of a satisfactory aperient is often difficult.

Lixen Elixir, containing in each 100 c.c. the water soluble extractive of 50 grammes of senna pods, is supplied in bottles of 4 oz. 2/3, 8 oz. 3/11, and 40 and 80 oz. for dispensing.

Lixen Laxative Lozenges. Each Lozenge contains the water soluble extractive of 15 grains of senna pods, and is supplied in bottles of 30, 1/8, and 500 for dispensing.

Prices include Purchase Tax.

LIXEN

THE GOOD-NATURED LAXATIVE

ALLEN & HANBURYS LTD · LONDON · E2

PHONE: BISHOPSGATE 3201 (12 LINES) WIRES: "GREENBURYS BETH, LONDON"

THE LANCET

LONDON: SATURDAY, AUGUST 19, 1944

WOUNDS OF JOINTS

IN discussing the surgical care of the wounded joint it is well to begin by recognising the differences between joints and the other components of the limbs. In a joint the process termed saucerisation, which implies elimination of nooks and corners, would require surgery so radical as to be destructive. Again, a joint, unlike the soft parts, cannot grow, within three or four days, a layer of granulation tissue that bars the way to invasion by bacteria. Joints can secrete a fluid capable of killing micro-organisms, but unhappily it soon loses this property and then becomes a medium favourable to bacterial activity. Whereas soft tissues, given the right conditions, are capable of becoming increasingly safe, because increasingly resistant to infection, an infected joint may be a growing source of danger if the synovial fluid is allowed to collect and become stale.

Like that of other structures, the surgery of an injured joint begins with correct wound toilet and ends with immobilisation. The first necessity is of course to get the patient into good surgical hands at the earliest possible moment. What next? If a relatively small smooth rifle bullet has perforated a joint through and through without damaging the bones, nothing need be done beyond superficial cleansing and immobilisation. At the other end of the scale is the destructive passage of a missile into or through the joint leaving its covering so damaged that closure is impossible. Here the toilet includes removal of all foreign bodies and detached fragments of bone, the cleansing of surfaces, some degree of saucerisation of the extra-articular tissues, chemotherapy and immobilisation. The question arises whether it is necessary to allow for the inspection of that part of the joint in which synovial fluid is likely to collect—indeed whether counter-drainage should be instituted at once to prevent it collecting. In these days of chemotherapy it seems that such secondary precautions are less and less required. The bactericidal qualities of synovial fluid can be reinforced by the secretion within the cavity of bacteriostatic chemicals, so that synovial fluid may collect, grow stale and yet be innocent. Indeed it has become current practice to enclose the joint completely in plaster, and merely remove a large window for inspection if the patient complains of tension and discomfort or has a rising temperature.

Small wounds need no closure; most of the bigger wounds cannot be closed without strain and tension, and therefore must be left open. But what are we to do with those many wounds of moderate size in which, after the toilet, synovial closure can be accomplished without undesirable tension? We shall agree that the extra-articular tissues are best left relaxed and free. Are we to stitch the synovia or not? Elsewhere in this issue Colonel FRUCHAUD * does not hesitate to say:

> "To leave the joint open is the one way to ensure constant flushing of the articular space by an active outpouring of fresh fluid, and in practice it is found that a widely open joint puts up a better fight against infection. It is wrong to suppose that an open joint is doomed to secondary infection."

Given good toilet and adequate undisturbed dressing under a plaster controlling the two joints above and below, he is not afraid of secondary infection of a joint, and is confident of its capacity to seal off its cavity. Certainly there appears to be no virtue in keeping synovial fluid in. Fluid which seeps out through the wound is replaced by new secretion so long as reaction is provoked, and this freedom of escape, while favouring the freshness of the fluid, has the additional advantage of preventing tension within the joint which might lead to the passage of infected fluid, not harmlessly through the wound, but dangerously into the lymphatic spaces of the limb. Throughout the scale of wounds, risks from suture outweigh risks from leaving the joint open. But if it is left open, need we fear delay in closing? FRUCHAUD unhesitatingly answers No, saying that the joint will seal itself off as soon as the inflammation is over. Given a complete toilet of the wound, good immobilisation and good drainage, there is indeed little danger in allowing a free escape of synovial fluid. Leakage early may well avert the need for drainage later; the leak will stop itself, and if the surgeon should find it advisable to delay the sealing process this can be done by suture of synovial membrane to skin (arthrostomy). In all this we are learning how to follow more exactly the principles that illumined the practice of HILTON and THOMAS—how to give the tissues peace after violence, avoiding anything that will disturb them during their periods of reaction and healing; how to leave them free to display the skill they have acquired through many millions of years in a rough-and-tumble world.

Quite different problems arise when there are extensive fractures of the articular ends. Sometimes it is difficult or impossible to be sure that debris has all been cleared out; sometimes one is afraid of leaving devascularised fragments incapable of resisting infection; and sometimes the articular surfaces are so distorted or disrupted that any useful movement of the joint will be out of the question. Clinical experience and common sense must dictate procedure, but at a forward unit it is very desirable to preserve all viable bone, to allow free escape of fluid, and to ensure good immobilisation; then at the base measures to aid the function or fusion of the joint can be undertaken at an early stage, before infection has been established. Here, in our opinion, the experience of the last war and of the years between runs contrary to the advice of FRUCHAUD, who is prepared to carry out "resection" of the articular ends in the presence of active infection.

In an infected joint there are three ages or phases—the hopeful, the doubtful, and the lost. And they make different demands. In the first, or hopeful, phase all that is called for is early and frequent aspiration of the synovial fluid, before it becomes stale. If immobilisation is good and there are no dead or devitalised tissues within the joint, daily aspiration combined with chemotherapy will often save the joint with perfect restoration of function. In the second phase the fluid has become purulent, though infection has not yet spread beyond the joint cavity. Here the need is for free drainage (arthros-

* We are happy to think that, even as we write, Colonel Fruchaud is free to return when he will to his Angevin home.

tomy), again with immobilisation and chemotherapy. Finally may come the third phase in which there is no hope of preserving the joint as such: the articular cartilage is destroyed and the infection may even spread into the intermuscular planes. This last disaster should be avoided by radical drainage, accompanied by such measures as removal of the patella, the olecranon, or the great trochanter, as both FRUCHAUD and GIRDLESTONE [1] recommend. Methods of drainage, with posture and splinting, are admirably discussed by TRUETA.[2] Movement should of course be started as soon as it is safe, and even where a joint is frankly infected a few degrees of movement may sometimes be given daily by the expert, provided adequate drainage has been established. However, in the mass treatment that an active phase of war demands, BUXTON is probably near the truth when he says, in his valuable report on knee wounds in North Africa,[3] that movement will seldom be started before three weeks or more commonly at five or six weeks. A knee-joint that has responded to good wound toilet followed by complete immobilisation in a few degrees of flexion, without trans- or supra-condylar pins, will after five or six weeks be quickly and progressively on the move. Where there is little damage to the articular surfaces, full free movement can be expected even though the knee has been immobilised for six or eight weeks. The value of keeping the joint in a few degrees of flexion throughout immobilisation can hardly be exaggerated.

Finally it must be said that all our ideas are being modified by chemotherapy: given the same delay in access to the patient, the same severity of wound, and the same surgical skill, the results are nowadays better, and we shall soon learn how much more can safely be accomplished in the way of primary closure. Where the sulphonamides have given us an inch, penicillin will give us an ell. Though unfortunately penicillin does not pass freely, like the sulphonamides, from the blood-stream into the synovial fluid, its direct injection by tube into the joint every six or twelve hours seems to be effective in clearing up such infection as may be found after the toilet of the wound.

RELIEF OF EUROPE

"IF UNRRA succeeds," said its Director-General, "the world will know that international coöperation is possible, that common interests can be stronger than separate differences." [4] The man-in-the-street hopes that UNRRA has now passed the laboratory phase and is already proof of the capacity of the nations to coöperate. But further evidence will certainly be welcome. The terms of the initial agreement and the subsequent shifts and compromises were bound to engender doubts. It is not, for example, entirely clear whether the Combined Boards, from which UNRRA must obtain its allocation of bulk food, are themselves controlled by any supreme council of the Allies. It is not clear that in any liberated territory (except the Balkans) the military command will encourage the operations of UNRRA, or that any government replacing the military jurisdiction will welcome UNRRA except on its own terms of administration. It is not clear that the governments in exile have not already, where they could, negotiated for their own purchases and consignments. We must recognise that there are many opportunities for partial evasion, discrimination and delay. In an outspoken editorial the *Economist* of July 15 says: "UNRRA is quite simply an experiment in rationing, in putting need before purchasing power, and all the world knows that there are few operations more arduous than this." ... It "may be a cumbrous instrument, with its Council of 44 nations, its international staff, its mixed committees and polyglot experts, but there is no other possible instrument and the only sound policy is for London and Washington to stop crabbing it and instead to make it really effective."

As regards food-supplies, this is probably as good a season as any for the reoccupying of territory. Grain crops will soon be in stack on the farm, at which point they are most secure against German malice, and root crops will still be in the soil. Any estimate of Europe's needs must take account not only of her available harvests but also of the movements of the war, the drifts of population, the Germans' will to destroy, and the time for destruction still at their disposal. Judging by precedent the enemy will concentrate less on granaries and warehouses than on transport and on processing plants; in a civilised country damage is most easily done by blowing up flour-mills, sugar refineries, oil-crushers and bakeries. But the final deficit condition of any one area, and the extent to which any liberated area can yield a surplus before more remote countries have to be relieved from hunger—all this depends upon the course of the war itself. It is correspondingly uncertain how much food the rest of the world will be called upon to contribute. Naturally UNRRA does not publish estimates of existing surpluses; and there is some tendency to leave the supply position vaguely indicated by saying, for instance, that "there are plentiful stock-piles of wheat," or that "the problem is how to get sugar from the Caribbean countries, rice and coffee from Brazil, beans from Chile and fish from Newfoundland." Both in official pronouncements and in the press the pendulum has swung between moods of optimism and moods of grave disquiet; and particularly does this apply to grain supplies. Obviously an unanticipated demand, as for a famine in Bengal or an extreme temporary shortage in Persia or North Africa, could disturb all calculations. If the next year is to see the liberation of Europe, much will depend on the fate of the surplus grain of Hungary and Rumania—which sets the battle for the Balkans in a new perspective.

Yet, if UNRRA is still a spirit waiting to be embodied in substance, it has a power to move the human mind. Famines today are no longer visitations; they are complex economic events, that usually mature over a period of many months or even years; there is a profound distinction in kind between a Turkish earthquake and a famine in Bengal, even though the sum of misery they produce may be comparable. In the same measure is the problem of relieving famine or scarcity a complex and a highly technical one. It is a task for the specialist and the administrator, by whatever passion of pity they may

1. Girdlestone, G. R. *Lancet*, 1943, i, 419.
2. Trueta, J. T. Principles and Practice of War Surgery, chap. 25, London, 1943.
3. Buxton, St.J. D. *Lancet*, 1944, i, 681.
4. UNRRA: The story of the United Nations Relief and Rehabilitation Administration. HM Stationery Office. 4*d*.

be sustained. We find it curious, then, that so little attempt has been made to coördinate and systematise the records of earlier famine relief. Only rather fragmentary accounts and memoirs exist of the Russian famines of 1911 and 1921, of the great hunger that accompanied the civil war in Spain, and of the historic famines of China and India. The period of relief that followed the last war is somewhat better documented; but here again details are often lacking and it has never been the practice of the philanthropic bodies concerned to sift and organise their valuable records of service. May we not hope that there will now be established by UNRRA a permanent bureau and library of relief experience, that will at last convert the outflow of improvised charity into a body of medical and technical knowledge? Already some practical handbooks have been published for the use of lay workers in relief; and more are in prospect. With the effort now being made to standardise the training of such workers under a unifying committee, the provision of textbooks and directives becomes imperative. We might go further and project a standard textbook for all future occasions, to be revised from period to period, after a survey of fresh field experience. It is too much to expect that this war will be the last of human disasters; and whatever else UNRRA achieves, it will leave us in its debt if it comprehends within a scientific treatise all the varied medical, social and psychological implications of relief administration.

The Director-General of this great undertaking still cannot know the precise nature of the substance upon which he will have to work, and the exact quantity of medical and food supplies that may be at his disposal. He will have to adapt his methods to conditions, and be all things to all authorities. But of all the conditions that make an international undertaking of this kind peculiarly urgent, none can be more serious than that of the "displaced persons." In Europe alone there are said to be some 20 or 30 million men and women who have been uprooted from their homes and in many cases removed across national frontiers; before the end comes there may be 10 or 20 million more. The feeding, registration, transporting and medical inspection of these "alien" multitudes needs an authority of continental scope. They cannot be permitted to drift as they will from country to country in search of home; and if they are restrained, they must be fed, treated and reassured. The ultimate successes of UNRRA may be as great as its friends could hope; but it is here, if we make no mistake, that it will be not merely a useful but an indispensable agent of human rehabilitation.

CONTACT WITH THE TUBERCLE BACILLUS

To the physician reviewing his experiences of cases of pulmonary tuberculosis, one of the outstanding features of the disease is the unexpectedness of its onset. He can recall case after case in which at the first sign of some slight departure from health the presence of already extensive disease was revealed by examination, and that, moreover, in a person whom he least expected would be a victim. These are distressing memories, particularly when a nurse or medical student was affected, and he used to ask himself whether the disease could not have been recognised earlier or, better still, prevented. He continues to ask himself why the disease occurred at all. Nor can he give a satisfactory answer; the most he can do is to review scanty and disconnected pieces of evidence and, with the help of surmise, try to build up a reasonable theory. Obviously, there must have been an infection with tubercle bacilli, but we do not yet know the relative frequencies of single massive infections and small repeated infections, nor their relative harmfulness at different ages and in different environments. Gross contamination of dwelling-houses, streets and public conveyances, such as was common fifty years ago, is now a thing of the past, and smaller infections have to a large extent been modified or controlled. But the improvements cannot be said to have produced a corresponding effect on the tuberculosis morbidity; the reason is, of course, that infection is not the whole story. As FISHBERG [1] wrote, "We are more and more becoming convinced that phthisiogenesis is more a problem of predisposition than of bacterial infection"; in other words, lack of resistance is a more potent, and a more elusive, factor than infection. What, then, constitutes resistance to tuberculosis? We think first of all of an antibody, and though none has been isolated we cannot doubt that at least one exists. Pending the assessment and clarification of the large mass of experimental work on immunity, it may be assumed, as a working hypothesis, that bacilli on entering the tissues set up a "bridgehead" in which toxin is produced; that this toxin acts as a stimulus to the formation somewhere in the body of an antitoxin; that the more intense and the more prolonged the stimulus the greater is the production of antibody, but only up to the point at which symptoms of toxæmia occur, after which the production of antibody declines; that antibody is made in excess of the immediate requirements and the surplus remains in the body for an uncertain and variable time; and that during a lifetime involving intermittent exposure to tubercle bacilli the antibody content fluctuates considerably. We know, also, that the presence of antibody is associated with a sensitivity to tuberculin, demonstrable by skin tests, presumably because the antibody splits tuberculin into products which excite an inflammatory reaction. Of the skin tests the Mantoux test is the best, for it is the most reliable and also is to some extent quantitative as well as qualitative. Our physician, therefore, with whom we began this article, pondering on the occurrence of tuberculosis and arguing that resistance is more important than infection, that antibody formation is connected with resistance, and that antibody formation is demonstrated by the Mantoux test, might reasonably ask these questions: is a sensitivity to tuberculin a sign of resistance to tuberculosis? is the degree of sensitivity proportional to the strength of the infecting dose, or perhaps to the degree of resistance? does reinfection produce the same result as the original infection did if sensitivity has been lost, and does it modify an existing sensitivity? These are not academic questions: the answers to them affect our whole attitude to the test and the use we can make of it in our efforts to control tuberculosis.

The Mantoux test occupies an important place in the Prophit Survey conducted by the Royal College of Physicians, and we turn to the interim report

1. Fishberg, M. Pulmonary Tuberculosis. London, 1932, vol. I, p. 112.

by DANIELS, completed in this issue, on the results in the group composed of nurses, for help in answering our questions. Without attempting a detailed summary of the findings, we may note certain statistical results, the chief of which are these. About 20% of the entrants were Mantoux-negative, about 30% showed a weak positive and about 50% a strong positive reaction. Mantoux conversion, from negative to positive, was more frequent during the first year in hospitals admitting all types of case than in those in which some selection was made and cases of chronic and advanced tuberculosis were excluded, the percentages being about 78 and 58 respectively. In the former type of hospital the first positive test, on conversion, showed a higher percentage of strong reactions; in about 70% of all cases of Mantoux conversion no clinical evidence of the change was noticed; of 452 originally negative and 2120 originally positive cases, 33 and 43 respectively developed tuberculous manifestations, including 12 and 19 respectively of clinically active disease. And the higher the degree of sensitivity at the first positive test on conversion, the greater was the subsequent incidence of tuberculosis.

What bearing have these results on the answers to our questions? First, is sensitivity to tuberculin a sign of resistance to tuberculosis? Regretfully we must admit that it is not. It is a sign of the presence of antibodies which may be able to resist an infection, or, if infection proceeds to the building up of a bridgehead, of a resistance to that process. When a bridgehead has been established resistance depends largely on the faculty for encapsulating the focus of disease by what is at first an imperfect cellular barrier but which tends to develop later into a firm fibrous capsule. Very likely the antibody is the means by which the cellular reaction is evoked; very likely the antibody aids the cellular reaction in the fight against the necrotic process; very likely the encapsulation enhances the antibody formation when a too severe toxæmia threatens. In these and other ways the two forms of defence may work together, and there may be other forms of resistance; but we submit that the antibody is par excellence the defence against infection and that the faculty for forming fibrous tissue is the chief resistance against disease; and it will be understood that, for the purposes of the argument, we consider that infection passes into the beginnings of disease when a definite necrotic core has been formed. The two forms of defence are not necessarily of the same strength in any particular individual; thus, one may have a moderately good resistance against infection—but, if that is overcome, a poor resistance against disease—and another the opposite; this has lately been demonstrated in laboratory animals.[2] Nurses Mantoux-negative at entry are, at that time, non-resistant to infection. It is known that they are more liable to develop tuberculous manifestations, including clinically active tuberculosis, than are the Mantoux-positive. The Prophit Survey figures show this fact, though not so emphatically as do the oft-quoted figures of HEIMBECK,[3] and they agree with the results of 20 other surveys that the subsequent tuberculosis morbidity is three times higher in the originally negative than in the originally positive group. But the originally positive group shows a morbidity by no means negligible, and the difference between the groups in this respect is not sufficient for us to be able to say that the test is a sign of resistance to tuberculosis. The Mantoux-negative group is made up mainly of nurses who have not experienced tuberculous infection. When they do experience it, for the most part during their first year in hospital, they go through the usual stages of primary infection; and if they have normal powers of antibody production and of fibrous-tissue formation, healing takes place without the formation of a recognisable primary focus. Nurses may be less favourably placed than the child in the combating of a primary infection, perhaps because the initial non-specific cellular response is liable to be less strong. In other words, the negative Mantoux test only means that these nurses still have to go through the period of infection which most individuals meet in childhood and which they meet, as a rule, successfully and uneventfully. But the Mantoux-negative group also contains some who have experienced infection and have lost the sensitivity they then acquired. It may even be argued that they were so resistant to disease, and overcame the beginnings of it so quickly, that they did not develop a high degree of sensitivity. Though Mantoux-negative these nurses may, in fact, be more resistant than some in the Mantoux-positive group who took longer to overcome the disease and developed a higher sensitivity, some of which was still present at entry. That this is not mere supposition is suggested by the observation in the Prophit Survey cases that a strongly positive reaction on conversion was associated with a higher subsequent morbidity—that is, a subnormal resistance to disease.

The second question—is the degree of sensitivity proportional to the strength of the infecting dose, or perhaps to the degree of resistance?—affects the attitude that we should take towards a strongly positive reaction. Such a reaction might indicate a severe or massive infection, or an infection which persisted, or a quite recent infection, or repeated infection, or, finally, an unusually good antibody formation in response to a slight stimulus. The significance may in some cases be determined with the help of clinical or radiological evidence, or by noting the results of subsequent tests. On the whole, it may be said that a strongly positive reaction is a warning that particular care and vigilance are required and certainly it must not be taken as a sure sign of a good resistance to tuberculosis. The third question—does reinfection produce the same result as the original infection did, if sensitivity has been lost, and does it modify an existing sensitivity?—is difficult to answer. The Prophit Survey figures show that in nurses in hospitals admitting all types of case there was, on Mantoux-conversion, a higher percentage of strong reactions than in nurses in the other type of hospital, and it is suggested in the report that this was due to reinfection. Presumably the sensitivity was stepped up by repeated small infections. Reinfection after an interval in which sensitivity has declined or vanished would, we expect, call into action the two main defence measures more quickly than in the case of a primary infection. The data are insufficient for any useful pronouncement and there is the difficulty, which indeed is present throughout the survey, that when the reaction was first found to have

2. Lurie, M. B. *J. exp. Med.*, 1944, **79**, 573.
3. Heimbeck, J. *Tubercle*, 1936, **18**, 97.

changed from negative to positive there was usually no certain indication of the actual date of the conversion.

Young adults entering any profession must expect to have to work hard. The nurse, in addition to hard work, is exposed to infections, the chief of which is tuberculosis; and the staffs of hospitals should regard the prevention of this disease among the nurses as one of their special duties. The memo on the Supervision of Nurses' Health,[4] published (in July, 1943) by the King Edward's Hospital Fund for London, makes recommendations covering all aspects of the control of tuberculous infection in hospitals. Attention should be paid to these, and there should where possible also be periodic examinations—clinical, radiological and clinical, including Mantoux testing—on lines similar to those of the Prophit Survey. If we have commented chiefly on the Mantoux testing, it is not because we do not realise the importance of clinical and radiological examination (as described in the Prophit Survey appendices on p. 244), but because the significance of negative and positive reactions still needs further elucidation, and particularly because the test provides one vital piece of information which no other line of investigation provides—the information, namely, that an infection, perhaps a primary infection, has taken place when the reaction changes from negative to positive—and this is a warning which it is not safe to neglect. The more exactly the date of this conversion can be fixed the better, but the three-monthly testing of negative reactors, recommended in the Prophit Survey report, marks the limit to which the frequency of testing can be taken. The phenomenon of delayed reactions, observed by DANIELS[5] in 13 cases of the survey, opens up the possibility of determining exactly the date of conversion with the minimum of discomfort to the nurses. In these 13 cases, it seems, there remained in the skin after the last negative test enough tuberculin to give a reaction as soon as sensitivity, due to infection, arose.

Our last, and by no means our least, interest in the Prophit Survey report concerns the morbidity figures and the risk from tuberculosis. It appears that among 2572 nurses entering the survey before 1942, and observed for an average period of 2·8 years, 31 cases of clinically active tuberculosis were found, and in addition 45 cases of minor tuberculous manifestations. Further, that the latest information about these cases showed that 2 had died and that 21 still had active disease. In view of the statements in the report that "At this stage therefore it is not possible to comment on the relative tuberculosis risk in nursing as an occupation" and "It is certain however that the mortality was low," it would not be justifiable for us to attempt to draw conclusions of our own. Yet we regret that it was not possible to include sanatorium nurses in the survey, so that the much-needed comparison could be made between the risks to nurses in general hospitals and in sanatoria. When such figures are available for comparison, it is not unjustifiable to expect that any increased risk of infection is more than counterbalanced by the healthier surroundings, the expert supervision and management, and when necessary the prompt treatment, which are to be found in a well-conducted sanatorium.

4. King Edward's Hospital Fund for London, July, 1943.
5. Daniels, M. *Lancet*, 1943, ii, 600.

Annotations

PENICILLIN FOR CIVILIANS

EARLY in the war Mr. Churchill summarised the production of munitions as: first year, none at all; second year, very little; third year, quite a lot; fourth year, all you want. In the production of penicillin we have now reached the stage of having quite a lot and next year there will be enough for everybody. Already, after meeting the needs of the Services, there is a substantial surplus for civilians and on another page we describe the arrangements made by the Ministry of Health for distributing this surplus. If waste of a scarce material is to be avoided, penicillin must be used under laboratory control, and therefore for the present it is offered only to hospitals. Throughout the country medical schools will be responsible for its allocation, and each school is asked to appoint a committee to decide what cases shall be treated and in what hospitals besides their own. No doubt they will, wherever possible, avail themselves of the services of those surgeons and pathologists that are already experienced in the treatment of battle casualties with the new remedy and are thus alive to potential dangers. With penicillin even more than with sulphonamides there is a risk that excessive confidence in the drug's action may breed surgical neglect, and there is the additional risk of contamination with insensitive organisms that may destroy its potency and harm the patient. Well used, on the other hand, penicillin is capable of working wonders, and though practitioners will regret that it cannot be supplied for treatment outside hospitals they will be thankful to learn that in real need their patients should now be able to have its benefits. For relatives and doctor alike, it is almost intolerable to know that a remedy exists but is otherwise employed and therefore unobtainable. The exclusion of cases of subacute bacterial endocarditis from the Ministry's list of conditions suitable for treatment is presumably necessary because they require huge doses and because some of the results have been disappointing,[1] but it makes us look forward all the more keenly to the time when we have "all we want." Meanwhile the Ministry have done everything they can to see that the penicillin in hand is used to the best advantage. It is supplied to the medical schools free of charge, and the patient's capacity to pay for it has been made irrelevant.

Penicillin has now been added to the schedule of the Therapeutic Substances Act, as a substance whose purity or potency cannot be adequately tested by chemical means. Henceforward anyone making a penicillin preparation for sale will have to obtain a licence.

PICRIC ACID AND BURNS

ABANDONED as a dressing for burns, picric acid has now been applied to a different purpose—viz., for the differentiation of damaged and undamaged dermis in a fresh burn. Patey and Scarff[2] have examined the changes taking place in human skin immediately after a burn. They note that blistering may be either superficial, causing the epidermal layer to split, or deep, in which case the whole epidermis is lifted off and only the sweat glands and sebaceous glands are left behind. The thickness of the blister depends on the amount of keratin in the skin over the particular region, and itself gives no indication of the level at which separation has taken place. Brown and McDowell[3] had already shown that the whole of the epidermis is removed in taking a thin skin-graft, but healing of the donor area can nevertheless be expected within 10 days. That burns do not all heal

1. *Lancet*, July 22, p. 117.
2. Patey, D. H. and Scarff, R. W. *Brit. J. Surg.* 1944, **32**, 32.
3. Brown, J. B. and McDowell, F. Skin Grafting of Burns. London, 1943.

so rapidly, even when apparently superficial, may be due to damage to the dermis either at the time by heat or subsequently by sepsis, trauma (dressings), or pressure.

Sometimes the dry, white or even charred appearance of the dermis leaves no doubt that it has been killed. In less severe burns simple inspection will not enable the surgeon to say whether or no the dermis had been injured by the heat. Patey and Scarff suggest the use of a modified van Gieson stain (0·2% acid fuchsin and a half saturated solution of picric acid in water). Applied to a fresh burn after removal of the blister it will stain living dermis a bright red. Dead tissue, on the other hand, takes up the picric acid and a deeper burn will stain bright yellow. These findings were checked by histological examination of tissues from small fresh experimental burns in humans.

The investigators think their method may be useful in enabling the surgeon to carry out immediate excision and skin-grafting, because he can be certain that the whole thickness of the skin has been destroyed. Unfortunately the opportunities for performing primary excision as a method of treatment are limited by factors other than lack of knowledge of the exact depths of the lesion. The method might find a wider use, as Patey and Scarff suggest, in determining the depth of a series of burns where the rates of healing under different methods of treatment are being compared. The very superficial burns that will heal readily with almost any treatment could thus easily be recognised before treatment starts. Before adopting the technique it will be well to bear in mind the possibility of the picric acid further damaging cells of the dermis injured, though perhaps not irretrievably, by the original burn.

NATURE AND NURTURE

THE child's need for affection as well as orderly upbringing has been the subject of correspondence in the *Times*, where a contrast has been drawn between the beneficent instinct of mothers and the cold ministrations of professionals: Lady Astor, for example, girded at "overtrained nurses, overtrained psychiatrists, and a tendency to treat children as problems." It is a pity that so sound a principle as the child's right to affection should be regarded as a battleground between natural wisdom and scientific stupidity, or quoted as a proof of the psychiatrist's morbid outlook. Many pædiatrists and children's nurses have no doubt sinned in thinking only of the physiological needs of the child, but they were not the most experienced and successful; and it is not at the modern psychiatrist's door that a charge can be laid of overlooking children's need for healthy mothering. An unpretentious book, just published,[1] would serve to rebut any such charge. In clear language, free from jargon or sentimentality (though by no means without warmth and vigour) an American psychiatrist experienced in the development of young children puts forward facts which illuminate the early development of human personality and make it plain that a baby's health cannot flourish unless its demands for love, security and individual care are met. Writing, not as a doctrinaire but as a practical physician equally versed in the pædiatric and the psychiatric sides of infantile health, Dr. Ribble incorporates psychoanalytic teaching in her exposition without urging anything that is abstruse or in conflict with the experience of sensible parents and nurses. Her chief theme is that the way the baby's emotional hunger is satisfied will influence not only his immediate health, in physical as well as psychological respects, but his emotional and social development later on. She recognises that some people may refuse to agree to this because they have been taught that "emotion, even when recognised and well controlled, is an influence that must not be allowed to enter the sacred halls of science," or that fondling a child will lead to excessive dependence. Disposing of such objections, Dr. Ribble puts the place of skilled guidance in perspective thus:

> "not every woman can mother a child, even though biologically she may be capable of giving birth. The phase of mothering which comes immediately after birth reflects inevitably her own upbringing, to which other emotional relationships have contributed. The woman who is herself emotionally sound and whose deeper needs are satisfied in the marriage relationship gives her child this love without the help of a pediatrician or a psychiatrist, just as naturally as she secretes milk. Unfortunately, however, our highly impersonal civilisation has insidiously damaged woman's instinctual nature and has blinded her to one of her most natural rights—that of teaching the small baby to love, by loving it consistently through the period of helpless infancy. It is for this reason that the modern woman may need help and guidance in her relationship with her baby."

In a vigorous description of the ill effects of thwarting a baby's natural needs, undesirable habits due to such thwarting (which will often have been unintentional) are said to be particularly frequent in large homes for foundlings and other institutions where young children are grouped together over long periods without considerable individual care, "but it must be remembered," she adds, "that these habits are not peculiar to institutions but often occur in homes where there is every comfort for the child, except emotional satisfaction, which comes from mother love." Dr. Ribble attacks some current foibles and fashions. Inveighing against over-cleanliness, such as obtained in the Kaiserin Augusta House to which Mr. Shaw referred in the *Times*, she says: "the mental attitude of chasing dirt with a stick may be suitable for floor cleaning but should be restrained where works of art are concerned and has no place whatever in baby handling." Apropos of breast feeding she remarks that "mothers say with spirit that they are not going to be cows. They seem even to prefer to be dinosaurs." (The dinosaurs laid their eggs in the sand, let the sun do the hatching, and left the infants to the hand of fate.) There can be no question that the marriage of mental and physical medicine in the service of the healthy child is going to be an essential pillar of preventive medicine; such books as this provide a valuable text from which to preach it.

EVACUATION OF LONDON HOSPITALS

As a precaution against air attack the London hospitals are sending most of their patients who are fit to travel by train to safer areas. Scotland has undertaken to receive some 4000 acute and 4000 chronic cases, the latter to bring their own medical and nursing staff. So far an unexpectedly large proportion of the patients have been in the chronic category, presumably because the London hospitals have lately admitted many invalids who could not be properly looked after at home. Some of the patients are going to the large voluntary hospitals, but the great majority are being admitted to the EMS hospitals directly administered by the Department of Health. It remains to be seen how kindly the exiles will take to rustication once the novelty has worn off, but we may hope that the need for it may be over soon.

1. The Rights of Infants. Margaretha A. Ribble, MD CORNELL. (Oxfd Univ. Press. Pp. 118. 11*s.* 6*d.*)

THE College of Physicians of Philadelphia has awarded the Alvarenga Prize for 1944 to Dr. Gervase J. Connor, of the department of surgery, Yale University School of Medicine, for his analytical study of anterior cerebellar function.

THE prize distribution and conversazione of the London School of Dental Surgery will be held at the Royal Dental Hospital, Leicester Square, W.C.2, on Saturday, Oct. 7, at 3 PM, when Sir Alfred Webb-Johnson will preside.

THE allowance of dried bananas for children with cœliac disease has been reduced from 14 lb. to 7 lb. a month. Application should be made to the local food office, which will require a detailed medical certificate.

Special Articles

THE WOUNDED FROM NORMANDY

EVACUATION AND DISTRIBUTION

(FROM A SPECIAL CORRESPONDENT)

THE care of our soldiers wounded in France is a great combined operation of Navy, Army, Air Force and Emergency Medical Services. Medical and surgical aid are now given in the most advanced positions and at the earliest possible moment after the wound is received. And the men are brought back to this country on an endless chain which began to move on D-day and will go on continuously until the last has returned.

The wounded join the chain under fire in Normandy when stretcher-bearers attend them in the field and motor ambulances bring them to dressing-stations and what are in effect field hospitals. Those selected for transport by sea are taken from these hospitals, by stretcher-bearers and ambulances, to the beaches, and thence by emergency means—ducks and so on—to the landing craft, hospital carriers, or hospital ships lying off shore. The ships sail to a port in Great Britain from which the wounded are taken by stretcher and motor ambulance to a hospital at the port, or by civil or military ambulance train to the care of the Emergency Medical Service hospitals.

Those selected for transport by air are taken from the front, by stretcher-bearers or ambulance, to a landing-strip, and then embark in big Dakota transport planes which fly to an air-port in the United Kingdom. Like those arriving by sea, they are then divided into those needing immediate attention at the port and those who can be sent on at once to the base hospitals of the EMS.

The chain of evacuation works continuously, and at every link of it medical and surgical care are available and constantly being given. This article describes mainly that part of the operation which begins when the wounded arrive by ship or aircraft at the port of disembarkation, but it should be realised that in Normandy surgery is now undertaken very far forward. (I talked to a paratroop medical officer who functioned behind the enemy's lines.) At a field hospital major surgical operations may be performed, and though I saw numerous cases arriving in Great Britain with amputations, and other major injuries, in plaster, I saw none with first field dressings only.

FROM FRANCE TO ENGLAND

Wounded arriving by sea reach this country in 2, 3 or 4 days after being wounded. Wounded arriving by transport plane arrive sometimes only 24 hours or less after being wounded. Because wounded embarked by sea go from the beaches to the vessel by emergency means they may be delayed by the weather. A wind blowing onshore and a choppy sea may cause much delay, because embarkation may be dangerous. Wounded embarked by air are loaded straight into the transport plane and arrive in this country about 1½ hours after leaving France, but whether he is going by sea or air, it takes some time for a casualty to reach the point at which he can be dispatched to Great Britain, and cases are not sent at once unless they are fit to travel at once. A short rest, a properly applied dressing, blood-transfusion, an emergency operation—these are all factors in the case.

Wounded arriving by sea or air whom I saw were in good shape and cheerful, although many of them were very tired and some few exhausted. A small number were suffering from what used to be called shell-shock and is now called battle exhaustion. Besides soldiers there were airmen, sailors of the Royal Navy, and merchant seamen—men of every rank and grade. Not to mention one man who could not speak and who had no papers and no means of identification who was considered to be a German prisoner.

The organisation at the seaport of disembarkation is controlled by a special sea-evacuation medical administrative unit, and that at the airport of disembarkation under a special air-evacuation medical administrative unit. These are responsible for deciding which casualties need immediate treatment and which can be evacuated at once to base hospitals for permanent treatment. The long endless chain of evacuation needs to run smoothly, and it combines the activities of large numbers of medical officers of the Services and the EMS. If friction arises in the multitudinous interlocking cog-wheels, it is the CVAC (sea-evacuation) or AVAC (air-evacuation) unit's business to lubricate the grinding gears.

Since D-day this endless chain has been running and has brought to this country many thousands of wounded. But fewer than you would guess. And with very much less suffering than one would think possible. And with a death-rate which can only be described as astonishingly low.

The evacuation services, too, seem to have discovered a new secret, and I almost blush to proclaim it. Navy, Army, Air Force and EMS; admiral, general, air-marshal, commissioned and other ranks, are all working together without thought of Service prestige or seniority of rank or of personal fatigue or exertion; all are on the job together. The job is giving the wounded man the best that the latest knowledge and scientific organisation can give to him—just that and all that—and all feel that it is good to be working in that company.

It is to this team spirit of all the services and all the personnel concerned, as much as to any individual factor, that the easy running of the evacuation machinery and the low death-rate must be ascribed.

The numbers of wounded in British, Canadian and United States forces have been 30 per cent. less than anticipated. The figures from June 6 to July 20 have just been released, and the totals of wounded are: British 27,766, Canadian 4354, United States 52,710, this last figure including, however, some 40 American casualties in April. The medical director-general of all Allied Forces, Lieut.-General Kenner (USA) at SHAEF, says that of this total wounded 97 per cent. survive. In the wounded reaching Britain the percentage is greater still, the chance of survival being 269 to 1. These good results must be attributed to many different factors—medical and surgical treatment, evacuation and handling of the wounded.

AT AN ENGLISH SEAPORT

The sea-evacuation service known as CVAC operates from a port which was one of the bases from which the invasion of France was launched. CVAC must be thought of as part of the general invasion plan, and it had very important defensive duties to discharge at the port; for here were concentrated many thousands of men and the colossal quantities of equipment of every kind from tanks to field ambulances which the Army required. It was assumed that on D-day these troops while concentrating, embarking, and crossing the Channel would be subjected to air bombardment. The port was a bottleneck which invited such attack. Two field ambulances were therefore detailed to establish posts and dressing-stations on the docks and around them to enable medical officers and personnel to cope with casualties. But the enemy attack on troop concentrations did not take place—for reasons which are another story. Nor was there air attack on the invasion armada.

The field ambulances and posts remain ready to cope with any attack which may yet take place, but their other function is to provide extra accommodation for casualties if the numbers arriving from France exceed hospital and other accommodation available. And they

have also provided medical officers and other trained personnel who have given invaluable service in many capacities to CVAC.

Part of the original plan was the making of arrangements with hospitals in and near the port for the reception and treatment of men too seriously wounded to be transported to base hospitals further afield. And behind this port organisation stood and stands the whole EMS organisation of the country with its command of motor transport and ambulance trains, and its network of special and general hospitals.

CVAC does the work at the port, and provides information as to casualties arriving by hospital ship, carrier, landing craft or by any other vessel. It also arranges for the disposal of those casualties needing immediate attention in hospitals at the port, and calls up the higher authority who regulates the movement of ambulance trains and arranges to which hospitals casualties shall be sent. The work of CVAC is carried out by an assistant director of medical services (ADMS) with the coöperation of attached officers of the field ambulances, representatives of higher formations, and representatives of the EMS and of local hospital organisations, both Service and EMS. Motor ambulances from the Red Cross and St. John Organisation are available in addition to Army vehicles, and stretcher-bearers and other personnel are detailed from the field ambulances.

In the first days of the invasion before hospitals were established oversea wounded arrived in a front-line condition and in any convenient vessel which could be adapted for their transport from the beaches. This period was a short one, and the tendency now is more and more for hospital ships or hospital carriers to be used and for all wounded to pass through a field hospital—this description is a general one and not intended to imply any particular establishment—before embarking.

There is still, however, one class of case which comes straight from the battlefield. There are the wounded of "the little ships" that keep guard against the enemy's attacks by light craft at sea. These little ships regard the carrier or the hospital ship as their advanced dressing-station and send them their wounded for treatment and immediate transport to this country. But the number of these cases is small.

The wounded whom I saw arrive came in a hospital carrier, most of them lying in comfortable cots on one of the several decks. The senior medical officer in charge of the carrier was a lieutenant-colonel of experience, and skilled treatment is available at any time if required. In point of fact very little operative or emergency treatment of any kind needs to be done, for only cases fit for travel are embarked, those requiring urgent treatment remaining in a shore medical unit in France. The number of deaths during the sea passage has hitherto been negligible, even including the earliest days when sea transport was less well arranged. Arrangements for supervision of the wounded on board are good; arrangements for provision of food and drink are also good, and any continuous treatment required—notably penicillin injections (into the side of the thigh)—can be given regularly.

Many of the wounded I saw on board and during disembarkation had been very seasick when coming over. Indeed the sea had been so choppy that the ship sailed without its full complement of stretcher cases, for they could not be embarked without risk of a severe wetting. But none appeared to have suffered anything more than the passing discomfort of sea-sickness.

As soon as the ship arrived, medical officers from CVAC went on board and received the list and particulars. The walking wounded were evacuated to a waiting train—a civil ambulance train in charge of a civil medical officer of the EMS. The stretcher cases were divided into those needing hospital care at the port and those able to proceed to a base hospital. A very large proportion of cases went on to base hospitals, but some (including chest injuries) were sent to hospitals in the town.

One of these hospitals was a county institution staffed by the county authority and the EMS, reinforced by surgical teams. It was a good example of what can be done by the provision of extra operating theatres, and—perhaps more important—by efficient administration, to change what might have been an inadequate into a very adequate hospital indeed. Another of these hospitals was in charge of the Navy; the building was old and indeed historic; there were operating theatres underground and there were wards open to the sun.

The officers' and nursing sisters' uniforms, some excellent lighting underground, the long vistas of buildings, passages and corridors, all in ship-shape order, added colour and brilliance to an A1 medical and surgical service. Of a truth, the wounded of any and all Services have nothing to complain about when all coöperate so wholeheartedly in their care.

ON THE QUAY

The whole of the services at the port work on a 24-hour basis. A carrier may come in late at night and the casualties have to be evacuated into the ambulance train in the small hours of the morning.

Working by dimmed lights on the quayside, everything goes at great speed, although there is always the overhanging possibility that an air-raid alert may compel the putting out of lights and working in the dark. This did not happen when I was there, but individual examination of cases and an occasional hold-up for some special reason inevitably take hours of time. The night I was on board the hospital carrier discharging its wounded, a minor incident caused the expenditure of a lot of time. One of the casualties evacuated from France was a doubtful case of infectious disease. Was it chickenpox or smallpox? Two contrary opinions had already been given and there had to be a concentration of opinion at the port to weigh up the evidence after further examination of the suspect. Fortunately for all concerned, the condition turned out to be chickenpox, but you have to be careful.

The watch for infectious disease must be constant from now on, and its scope is extended because among the wounded are a proportion of German prisoners. German they are called, but many are Polish and some are conscripted members of the Todt labour organisation who may be Russians, Ukrainians or whatnot. Some of the prisoners I saw were Polish and some were German—not very good specimens physically, but it is notoriously difficult to judge a wounded man's category when he is bandaged and in bed. The more I looked at the wounded on the hospital carrier, or talked to the medical officers, or chatted with the men themselves, the more I asked myself how they could be so astonishingly fit in appearance. This appearance was no delusive one, and in fact the men were amazingly fit. But there is no single answer to the question—or rather no single factor is responsible for the fitness.

REASONS FOR SUCCESS

The low casualty-rate among the wounded officially issued by Lieut.-General Kenner confirms the impression I received. And to the question "How does this happen?" the answer seems to be that it is the result of first-class organisation added to new methods of treatment.

One factor in success is undoubtedly that in war today the medical officer and the medical organisation go as far forward as the most forward battle troops. There are field ambulances with paratroops and with tank formations. Another factor is the all-round increase of the knowledge of first-aid among the men of all formations—tank formations for instance. But

there is another more hidden factor which has come to the Forces from the Army School of Hygiene—namely, special courses for combatant as well as medical troops which have taught men how to maintain a very high standard of individual health. The physique of the Commando has become almost legendary. But the high level of Commando troops' health is only a measure of a level to which all active troops, whether combatant or non-combatant, are directed.

The modern soldier knows more about how to keep himself "fighting fit" than any soldier has ever known before. Let us hope he brings the knowledge back into civil life and that the RAMC officers who have learned of the glittering possibilities of personal fitness bring it back into the National Medical Service after the war. It is a gift the Army Medical Services have to make to the nation, for nothing like it has been done before either in military or civilian life.

Next in importance to very early first-aid comes early surgical treatment with early blood-transfusion. Apart from the improvements in personal hygiene and in organisation, it is probably blood-transfusion that has made most difference to the wounded men. Transfusion has saved thousands of lives, and it will be interesting, at some later date, to compare British and USA results. For the USA forces have taken matters a step further than the British and added a record of the blood-group of each soldier on his identity disc. Our Army organisation has hitherto not done this, but it is a matter well worth considering, especially in view of hostilities which will still continue in the East after Hitler is defeated.

The factors mentioned so far were all in operation in the campaign in Africa and in other campaigns up to D-day. But after D-day a new factor came into existence for all troops wounded in France. That is the universal accessibility of penicillin.

Not every wounded man gets penicillin, but a large proportion do. And the results can perhaps best be summed up in the words of a hospital surgeon: "Nowadays we have wards full of wounded men but they are not sick men." Wounded men treated successfully with penicillin may have the inconvenience of foreign bodies in the flesh, or other injuries, but they do not have sepsis or rise of temperature and do not feel ill. The appearance and nursing of hospital wards is transformed, and the large proportion of cases surviving becomes also a large proportion of cases recovering more and more completely.

One footnote to these observations. At several hospitals I visited in a very crowded three days' inspection of these evacuation arrangements, I saw one or two "resuscitation" rooms. But I was told they were not used. They did not need to be used because the casualties arrived in such good shape.

PENICILLIN FOR CIVILIANS

DISTRIBUTION AND USE

APART from a small quantity devoted to clinical trials, all official supplies of penicillin in this country have hitherto been reserved for the Services and for air-raid casualties. It is expected that sometime next year there will be enough to meet all requirements, and meanwhile production has increased sufficiently to enable the Ministry of Health to issue a limited quantity each month for use in civilian hospitals.

In order that this shall be employed to the best advantage it will be distributed through the medical schools and faculties of universities. Each school has been allotted an area, generally corresponding to the Civil Defence region in which it is situated. Patients in this area who need penicillin either to save their lives, or because it is the only means of assuring their recovery, will be admitted either to the teaching hospital of the school or to some other hospital receiving penicillin from the school. In London the medical school that controls the sector will be responsible for the sector area; in the four London sectors embracing a second medical school that school will be responsible only for the patients that normally seek admission to its associated hospital.

It is suggested that in each school a committee should be appointed to allot the supplies, and that this might consist of the heads of the departments of medicine, surgery and pathology, or senior members of the staff. Though recommendations are made by the Ministry (as set out below) this committee could authorise the use of penicillin in hospital for any case it thought suitable.

Practitioners or consultants wanting penicillin treatment for cases under their care should arrange for the patient's admission to the hospital to which he would normally go for inpatient investigation and treatment. This hospital would then be responsible for the diagnosis and (if it had not already received a supply) for obtaining penicillin from the medical school of the area. If any difficulty should arise in securing admission to hospital, the practitioners should apply direct to the medical school, which will be able to arrange that an approved hospital accepts the patient.

The amount of penicillin sent to each school is based roughly on the population of its area, or the size of its teaching hospital, but this monthly allotment can be adjusted in the light of experience. Supplies are also going to Scotland and Northern Ireland, and there too the medical schools will be responsible for their use and distribution. The penicillin is at present provided gratis, but the Government reserve the right to impose a charge later on.

Notes drawn up by the Ministry of Health for the use of the schools include the two memoranda reproduced substantially below:

Selection of Cases for Treatment

1. Conditions which should be admitted to hospital if the case is otherwise suitable for treatment with penicillin:

Staphylococcal infections.—Septicæmia. Early acute osteomyelitis. Severe carbuncle, cavernous sinus thrombosis, or any other life-endangering infection.

Hæmolytic streptococcal, pneumococcal and meningococcal infections.—Any life-endangering infection (septicæmia, pneumonia, meningitis) which has failed to respond to adequate sulphonamide treatment.

Gas gangrene.

2. Conditions deserving special consideration, which may be treated if supplies are sufficient.

(*a*) Injuries of the eye and infections of the conjunctiva and cornea.
(*b*) Sepsis in wounds and burns.
(*c*) Infections of the skin resistant to other forms of treatment (sycosis, impetigo, &c.).
(*d*) Sulphonamide-resistant gonorrhœa.
(*e*) Acute empyema and pyogenic infections of the pleura as a complication of tuberculosis.
(*f*) Traumatic lesions including compound fractures of any bone, extensive muscle injuries, facial injuries, injuries necessitating suture of tendon or nerve, thoracic injuries (hæmothorax), and post-traumatic pneumonias.

If supplies are sufficient, approved departments and hospitals specialising in ophthalmology, neurosurgery, thoracic surgery, burns, &c., may be given a supply of penicillin.

3. Conditions which should not be treated are those caused by organisms not known to be susceptible to penicillin (including rheumatic fever, ulcerative colitis and all other intestinal infections). Bacterial endocarditis and syphilis should also be excluded.

4. Penicillin has been used with apparent success in several conditions not mentioned in this memorandum, and, although further instructions may be issued from time to time, it is left to the local committee to decide what other conditions may be treated.

Properties and Administration

Penicillin is issued for clinical use in the form of powder or tablets of the calcium or sodium salt, each tablet at present standardised to contain 10,000 or 15,000 units. Actually, only 20 to 40% is pure penicillin.

SPECIAL PROPERTIES

Stability

Penicillin is stable in solution only between pH5 and pH7 (i.e., at about neutrality). It is rapidly destroyed by acids and alkalis.

It loses activity when heated above body temperature and is rapidly destroyed by boiling; therefore it cannot be sterilised by boiling or autoclaving.

It is destroyed by the enzymes of many common organisms such as air bacteria and coliform bacilli; if these bacteria contaminate a solution it will quickly lose potency, so the vehicle (e.g., saline or ointment base) must be sterilised before being mixed with the penicillin.

It is destroyed by the heavy metals (copper, mercury, lead), by alcohols (methylated spirits and absolute alcohol) and by oxidising agents (hydrogen peroxide and potassium permanganate). Such antiseptics should not therefore be used on a wound before or during penicillin treatment.

Solubility, absorption and excretion

Penicillin is freely soluble in water and diffuses readily.

It is quickly absorbed after subcutaneous or intramuscular injection or when applied locally to a wound. Maximum concentration in the blood is reached within 15 minutes of an intramuscular or subcutaneous injection, so little time is gained by intravenous injection. Injected intravenously penicillin reaches all parts of the body within a few minutes.

The meninges and pleura, and the serous membranes of joints, however, present a barrier across which penicillin does not readily pass. Infections in these cavities should therefore be treated by injection of penicillin directly into the cavity.

Though absorbed from the intestine, penicillin cannot be given by mouth, as the acid in the stomach destroys it. Neither can it be given by rectum, as the bacteria of the fæces destroy it.

Penicillin is concentrated by the kidneys and excreted rapidly in the urine. Excretion begins within a few minutes of administration by any route.

Antibacterial action

Penicillin, in the concentrations used clinically, has a much stronger bacteriostatic than bactericidal action, so an antibacterial concentration must be steadily maintained until the bacteria have been disposed of by leucocytes and other body defences. This usually requires a period of at least some days. If the concentration is allowed to drop during this time any living bacteria will start to multiply and there will be a recrudescence of infection.

Unlike the sulphonamides, penicillin is not inhibited by serum or pus, so it is effective in frankly septic lesions.

Dead tissue such as a sequestrum or large slough will harbour bacteria out of reach of the drug. Such tissue should be removed at the beginning of the treatment, or in any case as early as possible.

The chief organisms susceptible to penicillin are the gonococcus, the meningococcus, *Staphylococcus albus* and *aureus*, *Streptococcus pyogenes*, *Strep. viridans* (most pathogenic strains), the pneumococcus, the diphtheria bacillus, the clostridia of gas gangrene, and the spirochætes of syphilis, relapsing fever and possibly Weil's disease.

Common pathogenic organisms which are insusceptible are *Ps. pyocyanea*, proteus, *B. coli*, *Strep. fæcalis*, and occasional strains of *staphylococcus* and of *streptococcus*.

Any disease caused by susceptible bacteria is suitable for treatment with penicillin. Where there is a mixed infection composed of sensitive and non-sensitive organisms (e.g., in war wounds) considerable benefit often follows elimination of the susceptible organisms although the insusceptible organism remains.

SYSTEMIC ADMINISTRATION

Intramuscular and subcutaneous injection.—A convenient concentration for injection is made by dissolving 15,000 or 20,000 units in 2·0 to 3·0 c.cm. of sterile distilled water or saline and this is injected intramuscularly every 3 hours. Penicillin has also been injected subcutaneously with no ill effects. The effective single dose for an adult has been established as 15,000 units; this dosage will maintain a bacteriostatic concentration in the blood up to the end of 3 hours; but during the 4th hour the concentration as a rule falls below a bacteriostatic level. In very severe infections much larger doses may be used with perfect safety.

Intravenous drip.—The powder or tablet is dissolved in an appropriate volume of sterile saline or glucose-saline (100,000 to 120,000 units in 2 to 3 pints) and given by intravenous drip. This quantity is sufficient for 24 hours. The saline must be free of pyrogens.

Intramuscular drip.—Penicillin may be administered by continuous intramuscular drip, giving 1 to 2 pints of fluid a day, the total dose per day being the same as for intravenous drip. Rigid aseptic precautions are essential.

LOCAL ADMINISTRATION

Powders.—Tablets are crushed and mixed in a mortar with sterile sulphathiazole or sulphanilamide powder. Mixing is then completed by vigorous shaking in a large bottle, the final concentration being 2000 units of penicillin per gramme. The stability of penicillin in sulphonamide powders is not finally determined; so, for the present at least, penicillin-sulphonamide powder should not be stored for long. This powder can be blown with an insufflator on to raw surfaces or into wounds. It is of real use only on relatively dry wounds, as blood or exudate rapidly wash it away. Application should be repeated every 24 hours at least. A single application cannot be expected to remove infecting organisms as the drug is fairly rapidly absorbed and eliminated.

Creams.—The powder or crushed tablets can be made into a cream of 250 units or more per gramme by mixing with either of the two following bases:

(i) 'Lanette' wax SX 12 parts, arachis oil 25, and water 55.

(ii) 30% lanette wax SX in water.

This makes an excellent dressing for surface wounds, such as burns, and can be placed in deeper wounds. Application every 24 hours is effective. On burns or wounds the period may sometimes be extended to 48 hours.

Solutions.—Solutions in sterile water or saline of 250 units or more per c.cm. are also used for local treatment. The solution is injected through tubes stitched into wounds after closure, or through a needle into abscess cavities after aspiration of the pus. The injections should be made once or twice daily.

The principle involved in local use is to hold the drug in contact with the infected tissues for as long as possible. Irrigation of an open wound is wasteful and ineffective.

Solutions may also be used for injection into the theca in meningitis and into pleural and joint cavities after aspiration. For the theca, strengths up to 1000 units per c.cm. may be employed; much stronger solutions are required for other cavities. Injection once daily is effective in these cavities as the penicillin is retained for some time. Eye infections are effectively treated by frequent applications (every 1 to 2 hours) of drops containing 500 to 2000 units of penicillin per c.cm.

HANDLING THE DRUG

It has already been indicated that penicillin must not be exposed to heat, acid, alkali or to certain chemicals, and that bacterial contamination should, as far as possible, be avoided. The saline or other vehicle should be sterile before being mixed with the penicillin; clean sterile vessels and instruments should be used in dispensing.

Tablets and powder, more especially of the sodium salt, are hygroscopic; when damp they readily lose activity, so tubes and bottles should be closed at once and should be airtight.

All preparations, and particularly solutions, lose activity more rapidly when warm; storage at 4° C. or colder is therefore a great advantage.

For injection, the powder or tablets should be dissolved only a short time before use. Watery solutions should never be kept more than a few hours at room temperature, or up to 5 days in the refrigerator. Creams should be kept in the refrigerator, but not frozen. Penicillin should not be mixed with sulphonamide powders or creams longer than a week before use.

Since many pathogens such as *Ps. pyocyanea* and proteus are insensitive to penicillin, strict aseptic precautions should accompany injections and dressings.

REACTIONS

Pure penicillin will probably prove to be virtually non-toxic, but the impurities which accompany it at

present sometimes give rise to minor reactions which vary from batch to batch.

Fever may be due to the penicillin preparation, though the water or saline should also be considered as a possible source of the pyrogen.

Thrombosis is often seen after a few days of intravenous administration. No serious effects have been reported.

Pain may be felt after intramuscular or subcutaneous injection and may be sufficiently severe to make a course of 3-hourly injections very wearing to the patient. A change to a continuous intramuscular or intravenous drip is sometimes indicated. Alternatively, enough procaine may be added to the penicillin solution *immediately before injection* to give a final concentration of ½–1% procaine. Mixtures of penicillin and anæsthetic should not be kept. For the present at least, procaine is the only anæsthetic recommended for this purpose. Incorporation of anæsthetic in penicillin solutions for intramuscular injection should be reserved for cases where pain is a serious problem.

Rarely, a general *urticarial rash* has been reported. It has subsided quickly and has not recurred on further administration.

DURATION OF TREATMENT AND CRITERIA OF CURE

Systemic treatment aimed at preventing spread of infection may be required for only one or two days; thereafter local treatment may suffice. When systemic treatment is aimed at eradicating the infection it should be continued till the infecting organism has disappeared, and then for at least 2 to 5 days more, according to the severity of the initial infection. Bacteriological control is of great assistance in assessing progress.

In *systemic treatment* improvement in the general condition is usually seen within 2 or 3 days, but the temperature often falls by lysis over a much longer time. Fever maintained for a week or more, if other signs are favourable, is not a cause for anxiety. In *local treatment* the relief of pain and subsidence of swelling are usually the first signs of improvement. Bacteriological tests are most valuable in assessing progress.

In battle casualties the administration of penicillin in no way diminishes the need for early and adequate definitive surgery.

FAILURE

There should be no failure if the penicillin is so applied as to be continuously in contact with all infecting organisms in a bacteriostatic concentration. Under these conditions bacterial growth must cease and the infection be overcome. Possible causes of failure are:

(1) Too small a dose or too infrequent application.
(2) Dead tissue (sequestrum, slough, pus) in some unsuspected place maintaining the infection, or a focus (e.g., in a serous cavity) is not being reached by the drug.
(3) The bacteria are not susceptible.
(4) The penicillin preparation has lost potency.

Pus caused by gram-negative bacilli (insusceptible) may give rise to alarm; but many wounds appear to heal in spite of the presence of "gram-negative pus" if staphylococci and streptococci are eliminated.

MEDICINE AND THE LAW

"I certify that ..."

MEDICAL practice has seldom been carried on under such conditions of strain as at the present time. It is with no want of sympathy for overworked doctors that attention is drawn to a Scottish prosecution for carelessness in the signing of confirmatory certificates under the Cremation Regulations. An Aberdeen practitioner had signed without consulting family doctors as to the cause of death. He admitted nine offences and pleaded in extenuation that all the particulars and answers to the necessary questions were contained in the forms which the family doctors had already filled up. The sheriff fined him £50. There was, of course, no suggestion whatever of deliberate falsity; it was merely carelessness due to pressure of work. The incident, however, needs publicity. The acceptance of a doctor's signature for various statutory purposes is based—as every medical student is reminded—on the presumption that the practitioner will certify with a due sense of responsibility according to the requirements prescribed. The Cremation Regulations were certainly not framed with the idea that the confirming certificate would be given without proper inquiry. "Did you never hear of venal doctors?" asks Morris Finsbury in that passage so often quoted from *The Wrong Box*; "they're as common as blackberries; you can pick 'em up for three-pound-ten a head." As far as compliance with the law is concerned, careless certification, done in a hurry to save time or oblige relations, is as improper as the more sinister operations contemplated in Stevenson's playful story.

Successful Amateur

The inexorable language of the Medical Act stipulates that the public shall have certain means of distinguishing the qualified from the unqualified practitioner. The unqualified man, not content with the almost unlimited right of practice which the law allows him, would not be human if he did not occasionally aspire to get the best of both worlds. No tedious and expensive years of specialised education and training have brought him through the medical schools to the goal of a recognised degree. Obliged to award himself the necessary qualification, he crashes or creeps through the gate which the Medical Act erected. Sometimes—let us concede the fact with admiration and envy—he acquits himself with credit or at any rate without disaster. Should he then be tripped up by the law which he has broken, he is sure of sympathy. If it can also be said that it was his lifelong ambition to become an eminent surgeon but that his hopes were frustrated by the poverty of his parents, we must all feel that the Medical Act ought to leave him a loophole for admission to the register just as later statutes have dealt generously with the 1881 veterinary surgeons, the 1921 dentists or the 1938 architects. Should all else fail, the Archbishop of Canterbury, exercising that vestigial authority which survives from the pre-Reformation era, might at least grant him a Lambeth degree.

These random moralisings are called forth by the case of Mr. Norman Warren, aged 32, who left school at fourteen to find employment in garages under motor engineers for the next six years. He then worked as a dispenser and proceeded to medical study at King's College, London, though he omitted to present himself for the first part of his MB examination. Having the ill luck to suffer a hip injury, he spent the next five years in various hospitals, thus seeing something of professional practice from, so to speak, the other side of the counter. Subsequently he held unqualified posts at the Taunton and Somerset Hospital, Bridgwater Hospital, Royal West of England Sanatorium, Weston-super-Mare, and Bristol General Hospital. Then he crossed the Rubicon. Giving himself the diploma of licentiate of medicine and surgery and describing himself as house-surgeon at Bristol General Hospital, he was appointed resident house-surgeon at Queen Elizabeth Hospital, Birmingham, and, in the course of his duties, he wrote prescriptions which inevitably brought him within the clutches of the Dangerous Drugs Acts. At a Cheltenham hospital he performed two operations for appendicitis single-handed. Prof. Gilbert Barling, hon. surgeon to the Queen Elizabeth Hospital, was able to tell the court at Birmingham he had no reason to believe that any patient had suffered through Mr. Warren's attentions. Pleading guilty to charges of having pretended to the LMS qualification and of having procured morphine while unauthorised, Mr. Warren told the court, by way of extenuation, that he had a fair knowledge of medicine and surgery; he had, he claimed, worked very hard at these subjects, studying the textbooks carefully. He submitted that he had not really meant to take any criminal action. The court, however, could hardly overlook that deliberate crossing of the Rubicon unless it was prepared, according to the legendary Indian practice, to accept a "failed BA" as a sufficient equivalent to full success in the examination-room. A fine of £45 was imposed.

MESSRS. ROCHE PRODUCTS LTD. now issue 'Beflavit' riboflavin ampoules, each containing 10 mg. for intramuscular or hypodermic injection. It will be recalled that Ferguson (*Lancet*, April 1, 1944, p. 431) found that 10 mg. of riboflavin daily was needed to produce rapid diminution in the corneal circulation in patients showing abnormal corneal vascularisation.

Reconstruction

TWO MORE QUESTIONARIES

VIEWS ON A NATIONAL HEALTH SERVICE

LIKE the BMA, the British Medical Students' Association has been recording reactions to the Government's white-paper on medical services, and now presents an analysis by the British Institute of Public Opinion. Meanwhile the institute has ascertained the views of a representative sample of the public, and by courtesy of the editor of the *News Chronicle* we are able to describe the findings.

Medical Students

From 8000 medical students questioned, 2588 replies were received, 73% coming from men and 26% from women. The occupation of the students' fathers was :—

	(%)
Medicine	21
Company director, higher professions, independent	38
Salaried, manager, teacher, farmer, proprietor of retail business	28
Skilled artisan, clerical, weekly wages	4
Others, weekly wages, factory, transport, mining, &c.	2

The white-paper had been read in full by 57% and in part by 40%. Answers to the question "on the whole are your reactions favourable or unfavourable?" have been analysed as follows :—

	Favourable (%)	Unfavourable (%)	Don't know and blanks (%)
Total	51	40	9
Men	47	43	10
Women	61	32	7
Occupation of father :			
Medicine	38	52	10
Company director, higher professions, independent	50	41	9
Salaried, managers, shop proprietors	73	18	9
Skilled artisans	73	18	9
Others	73	20	7

The Government's proposal that complete medical services should be available to everyone free of charge found 72% assenting and 25% dissenting. But, by 67% to 18%, the students thought that the white-paper "places doctors under clinical control of local authorities," and opinion was equally divided on whether the central administrative structure it proposes is satisfactory or not. A small majority (53% to 45%) considered it reasonable that the Central Medical Board should "be able to require a young doctor, who decides to enter the public service, to give his full time to that service during the early years of his career in cases where the needs of the service require this." A larger proportion (65% against 31%) would give the Board power to prevent newcomers from entering public practice in over-doctored areas.

In principle, 89% approved of health centres. Asked what form they would prefer to see commonly used 33% wanted a centre where both preventive and curative work is done, 27% the kind outlined in the white-paper, 17% the white-paper model plus a few beds, and 9% a purely diagnostic centre. For the payment of doctors taking part in a National Health Service, 34% favoured a salary, 53% a small basic salary plus capitation fees, and 10% capitation fees alone. Assuming adequate compensation, a majority of 50% to 37% was willing to see the sale of general practices abandoned. Other questions were :—

> Have you incurred a debt in order to obtain your medical training? (YES 23; NO 74.)
>
> The NHS will require an increase in the number of doctors. Do you think from your contacts with others that financial assistance will or will not be required to enable larger numbers to enter the medical profession? (YES 77; NO 15; DK 7.)
>
> Is it possible for you to set up in practice without incurring a debt? (YES 19; NO 63; DK 16.)

Asked what type of post they hope to obtain under the present system, 34% said consultant, 28% said general practitioner, and 26% said whole-time salaried. Though a majority (49% to 36%) believed that the introduction of a National Health Service, as proposed in the white-paper, would enhance the quality of the country's medical services, a minority stated that they would enter such a service (YES 41, NO 43, DK 15) and only 24% wished to give their whole time to it.

The Public

The British Institute of Public Opinion interviewed members of the public chosen as a representative sample of the whole adult community. Of these, 86% said they had a doctor of their own, but 37% could not obtain his care free of charge. 14% had known times when the need to pay for treatment prevented them from seeking it.

Answers to the question "Where did you last see your doctor?" were: panel 45%, private 37%, hospital 6%, dispensary 5%, works 3%, clinic 2%, municipal 2%. Of the 23% taking medicine regularly 15% said it had been prescribed by a doctor. Most of those questioned (79%) declared that if they were entitled to attend their doctor without payment they would do so; but 21% thought they would rather attend him privately and pay a fee, and the proportion rose to 54% in the higher-income group

> "On the whole," it was asked, "would you like the idea of a publicly run National Health Service, or would you prefer hospitals and doctors to be left as they are."

55% wanted to see a public service, 32% were against change, and 13% did not know. Reasons in favour of a NHS were that NHI patients would benefit (11% of comments), that there would be no unfairness between private and panel patients (4%), that it would help poor people (3%), and that specialists would be available to all (1%). In the age-group 21–29 63% wanted a NHS, compared with 50% of those aged 50 and over. The middle-income group were slightly more favourable than those with more money or less.

> "Would you approve or disapprove of health centres, where you might get more treatment than you could get at your doctor's surgery, but which might not be so near your home?"

69% approved, 18% disapproved, and 13% were non-committal.

53% had at one time been inpatients in a hospital (8% in a private ward) and the proportion of satisfied to dissatisfied was 45 to 6, 2 not venturing an opinion. Well over half had been in voluntary hospitals and the percentage of them satisfied with their care (87) was slightly higher than for municipal hospitals (82). Among ex-outpatients dissatisfaction was expressed by 17% of those who attended voluntary hospitals and by 22% of those who attended municipal hospitals.

> "Should voluntary hospitals remain voluntary, should they be run by a public authority, or should they become partly voluntary and partly public?"

Those who wanted the voluntary hospitals run by public authority were twice as many (42%) as those who wished them to remain voluntary (21%) or those who thought they should be partly voluntary and partly public (21%); while 16% had no views. A definite preference for public control was expressed by 50% of men against 34% of women, by 48% of those aged 21–29 against 39% of those aged 50 and over, and by 48% of the middle-income group against 41% and 40% of those respectively better and worse off.

> "Who do you think should have most to say about the way medical services are arranged, the doctors, or the public through the Government?"

Most votes here were cast for "the public" (35%) with "equal" next (32%), and "the doctors" last (25%). Support for public control was greatest in the younger and the lower-income groups. Of those commenting, 15% said "the medical profession knows best; it's their job"; 13% said "both parties should be safeguarded," and 11% said "the public should decide; they pay."

Finally the question was asked :

> "If we do not have a NHS, do you think that it is best to get rid of the panel, leaving only private doctors, or should we try to make some system as the panel work satisfactorily?"

Only 10% were in favour of abolishing the panel; 22%

expressed no opinion, and 68% wanted the panel to remain, many of them suggesting improvements. The wish to abolish NHI was most evident in the higher-income groups and least among those who are insured.

In England Now

A Running Commentary by Peripatetic Correspondents

THE British Council film *Accident Service* is free from the Bloomsbury self-consciousness which disfigures many of our documentary films, and its only failing is that it does not bring out that modern rehabilitaton methods, besides restoring a far higher proportion of accident cases to complete or almost complete functional activity and usefulness, accomplish this in a far shorter time than the older techniques. In the middle of a sequence showing exercises done by a miner recovering from a fractured spine, the woman next to me said, "I couldn't do these movements with a good back. We ought to have habilitation centres as well as rehabilitation centres." She has got something there (I have been out with several American doctors lately). We have our various physical training movements, gymnasia attached to YMCAs, propaganda issued by the Central Council for Health Education and the like. Edinburgh University, in its usual rôle of pioneer, was the first university in Britain to appoint a director of physical education and supply him with an adequate staff and a fine department. At the same time, voluntary medical examination was started for freshers, and on the results of this they were advised what games and exercises to take up. But these are not enough. Perhaps the Peckham Health Centre is nearest to the thing I have in mind, though I have been able to judge its work only by printed reports. The medical practitioner is alone qualified to see the individual's problems as a whole. The gymnastic instructor helps by correcting posture and improving muscle tone, but the importance of previous medical history, personality difficulties, the mental state of the patient and all the other relevant data are a closed book to him. Thus the need will not be met by merely reviving the National Council of Recreative Physical Training from its wartime sleep, though the council's beginnings were promising enough in their way. Schools may start the young in the right direction, but when one has passed forty most school teaching is forgotten and the need for ironing out bad habits has grown. In time the health centre of the White-paper may fill the gap, though it will be long before the ideal of staying well becomes established in practical politics. There is a place in every community of reasonable size for a centre dispensing advice and instruction on exercise and other methods for increasing our well-being and supplying all necessary facilities. It could be supplemented by holiday institutions on the lines of the "health farms" widely popular with tired business men in the States, though there must be a danger of these becoming stamping grounds for cranks and faddists. A couple of weeks in a place like that would do me a world of good.

* * *

When I got back to the cottage after that London locum it was hot and I longed for a cool drink. Our 20 ft. well is in the garden but is connected with a small hand-pump in the kitchen. The water is gloriously cold and sometimes we use the well as a refrigerator, lowering meat or butter half way down in a pail. To my astonishment when I pumped this time the water came up hot; the more I pumped the hotter it got. I was dumbfounded. I went into the garden and lifted the well lid; it was steaming down below. I thought of secret weapons, of some foul Adolphery, but came to the conclusion that the most likely explanation was that the local doodlebugs had disturbed a thermal spring. That night I went to bed thinking, "Well, I suppose I shall have to open a spa here." I saw rows of arthritic females lying in baths, where now the pansies are, and rows of gouty men on the other side of the garden path where the potatoes grow. We must get Jack Hulbert and Cicely Courtneidge down to open them. I saw Jack prancing up and down the path chanting "Now for the chalybeate, boys," and heard Cicely's bright: "Now, girls, under, splash, up again; stretch the muscles and ease the pain." In bed a coarse little brute in shorts, called Id, grumbled that the privacy of the cottage would be ruined, but a lanky man in a clerical collar, called Superego said "Look at all the Good you'll do!" Id said "Who the ..."; he was clearly winning when I went to sleep. Next morning the water was hotter still and I luxuriously held my hand under the steaming pipe. Then I felt a sort of tingle. I went into the garden, took off the well lid, and touched the pipe. I shot into the carrots. I rang up the Electric people. A man came with a car. I told my story graphically. He got a ladder and went and twiddled a wire up on the roof. "That'll be all right now; nice cheap way of getting hot water—for you, but not for us." He never looked at the well and Id didn't even have the fun of seeing him touch the pipe.

* * *

It is hard to resist a study of the American character by an American anthropologist (The American Character. Pelican Books. 9*d*.). Margaret Mead shows little detachment and her avowed purpose is delightfully American—the vigorous utilisation of American traits for the winning of the war and afterwards for sticking together the pieces. It is an amusing, witty book, but gives the impression that it was written by a zealot at top speed so as to put the world right while there is yet time—like the curate's first sermon. How? By anthropological means. One is reminded of those tuberculosis specialists who see tubercle everywhere or ENT experts who live in a world entirely populated by crooked septa, gorged turbinates, and quisling tonsils. The kindred sciences like genetics and natural history might also like to whisper a word or two in the coming settlement of the orb, but all the same, regarding it as a mildly intellectual amusement like the Brains Trust, Margaret Mead's voice is well worth listening to.

* * *

"... The owner is obviously a muscular man, left-handed, with an excellent set of teeth, careless in his habits, with no need to practise economy. ..."

"You think a man must be well-to-do if he smokes a seven-shilling pipe?" said I.

"This is Grosvenor mixture at eightpence an ounce" Holmes answered, knocking a little out on his palm. "As he might get an excellent smoke for half the price, he has no need to practise economy."—*The Memoirs of Sherlock Holmes.*

In our contemporary fix
This point does not arise.
We buy an ounce at two-and-six
And *still* economise.

* * *

There is a good deal of speculation as to the end of the war, and the latest story is picturesque. It happened, of course, to the friend of the sister of a friend—one never meets the subject oneself. I give it as it was told to me. A lady was in a bus in Bristol and found a Chinaman sitting beside her. He asked, in the most polite way, to be allowed to pay her fare. She, in astonishment, thanked him and declined. He pressed her, and she said that she really had no need to have her fare paid for her, as she had plenty of money in her purse, which was in her bag. But the Chinaman then told her that, on the contrary, her purse was not in her bag, and, on looking inside she found that this was true. "It is under the eiderdown on your bed," said the Chinaman. The lady then gratefully allowed him to pay her fare, and asked him, as he knew so much, if he knew when the war would end. "October 17th," he replied promptly. So now we know.

* * *

One of the most nervous (and most entertaining) people I know is a woman artist, thin, delicate, excitable, not young. During the 1940–41 blitz, before I knew her, she and her old Irish maid, Mary, used to go together under the table. "We were both terrified," says the lady. "Mary would pray out loud, and I would hear 'Mother of God ...,' then, crash, a bomb would fall, 'Miss, your behind's sticking out, put it under the table. Holy Saints, preserve us ...' Crash. 'Miss, put your behind in.' I couldn't help laughing, although I was so frightened." Nowadays, Mary is deafer and stays in bed, but her mistress still gets under the table, and barri-

cades herself with two easy chairs against blast; or she did until the advent of "those things," as the flying bombs are generally called here. In this part of the south of England they are often audible and visible before the alert has time to sound. "My dear, it was most curious," said my friend, after one of the first of these occasions, looking earnest. "Mary rushed into the room saying 'What's that?' and praying out loud, and I suddenly found I had the whisky bottle in my hand; I don't know how it got there. Then I went to bed, and when I woke up in the morning I found the tea-cosy on my head, and I couldn't remember at all putting it on." It appeared that during air-raids at night she had the habit of putting the tea-cosy on her head, and then a pillow over, and would sleep quite well, with the help of "two tablets." A few days ago she gave a tea-party, and I looked with interest at the large cosy keeping our tea hot. "Is this your air-raid teacosy?" I inquired. She remembered I was a doctor and rather fussy, and giggled. "No, dear," she said. "It's the other one."

UNSUSPECTED TUBERCLE

ASSESSMENT OF RADIOLOGICAL EVIDENCE

THE Ministry of Health, advised by its expert committees, has supplemented its report on the working of a mass radiography unit with three useful notes for guidance of directors of units and tuberculosis officers. Large-scale surveys of civilians have revealed many varieties of hitherto unsuspected tuberculosis: active, quiescent and healed. Full investigation of such a case takes time and may entail re-examination at intervals. The following recommendations for assessing the radiological evidence are based on knowledge so far gained. A calcified primary complex should be ignored. Thickened pleura should be ignored, unless a parenchymatous lesion is visible. If a large film of a suspect suggests complete healing (calcification of all visible foci) no further investigation is necessary. If a large film suggests tuberculosis of adult type and the observer is unable to decide whether the disease is healed, quiescent or active, a procedure based on age groups should be carried out, not forgetting social and economic factors, and particularly hours of work.

THE UNDER-THIRTIES

Lesions with calcification and fibrosis and doubtful recent foci should have full clinical investigation, including blood sedimentation rate; if sputum is absent a laryngeal swab test [1] should be done. If these investigations are negative, it is desirable that clinical and radiological reassessment should be carried out at such intervals as the tuberculosis officer in each case may think fit (if possible at intervals not longer than six months) for two years.

If there are uncalcified lesions with little evidence of fibrosis—i.e., isolated round foci and small clusters of uncalcified nodules usually in the upper lobes—and the result of adequate clinical investigation is negative, it is desirable that clinical and radiological reassessment be carried out at such intervals as the tuberculosis officer in each case may think fit (if possible at intervals not longer than three months), as a high percentage of this type break down without premonitory symptoms.

THE OVER-THIRTIES

Lesions showing extensive calcification and fibrosis should have one complete clinical investigation; if this is negative, it is desirable that clinical and radiological reassessment be carried out at such intervals as the tuberculosis officer in each case may think fit (if possible at intervals not longer than one year for three years). If the radiological lesion is in any way suggestive of recent infiltration or cavitation, periodic observation as advised for the under-thirties in paragraph is desirable.

The radiological demonstration of enlarged bronchial or mediastinal glands, with or without a visible parenchymatous lesion, demands full investigation. As the lesion may be carcinoma or some other non-tuberculosis condition, the value of early bronchoscopy should not be overlooked.

In all suspicious cases an additional antero-posterior view should be taken by placing the patient's back against the film with the head leaning backwards so as to touch the top of the cassette. The chin is projected forwards. The hands are placed on the hips and the operator then pulls the elbows forward; this gets the scapulæ clear of the chest. For the lordotic and oblique views, it is necessary to screen the patient to get correct angles. Radiographic teams attending for training are receiving special instruction on these points, and suitable technical factors for both large and small films have been embodied in a book of instruction sent out with each unit.

1. Described by Nassau, E. *Proc. R. Soc. Med.* 1941, **34**, 397. See also Munro-Ashman, D. and Nassau, E. *Tubercle*, 1943, **24**, 79.

Public Health

Scottish Health

A SUMMARY report, just issued, on the work of the Department of Health for Scotland in the year ended 30.vi.44 opens with the assurance that in the fifth year of war the health of the people has continued to be satisfactory. Although there is still room for improvement the rates for infant mortality, maternal mortality and stillbirths are the lowest yet recorded. Those concerning mothers and children are particularly gratifying. In recent years the unenviable rate of Scottish infantile mortality has occasioned grave concern and the present annual rate is still much too high at 65 per 1000 live births. The frank statement of the position in the report of the Scientific Advisory Committee has done much to stimulate infant welfare activity throughout the country.

During the year the number of cases of infectious diseases has on the whole tended to fall. There are a few exceptions—tuberculosis, dysentery of a relatively mild type, and cerebrospinal fever. The black spot is tuberculosis, although the number of deaths from this cause was lower than in the previous year. Notifications of new cases of tuberculosis continued to increase; the figure for pulmonary tuberculosis is now more than fifty per cent. above that for 1938.

Venereal diseases showed a small but welcome improvement. The high level reached in 1942 of new cases of syphilis attending clinics for the first time was not maintained. Yet the number of new cases continues to be sufficiently high to cause concern: at 4841, the figure was still some fifty per cent. above prewar experience. A special inquiry by the Medical Advisory Committee led to recommendations which are being studied in collaboration with interested bodies and organisations.

Of special interest is the new low record of deaths from diphtheria. Decrease in mortality from this cause has been marked during the past two years; and analysis of the figures for immunised and non-immunised children justifies the conclusion that the improvement in mortality from diphtheria may be related to immunisation of the child population. Recently the proportion of Scottish children immunised against this disease began to fall, and another campaign of national publicity to encourage immunisation is to be launched.

Infectious Disease in England and Wales

WEEK ENDED AUG. 5

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1410; whooping-cough, 1768; diphtheria, 471; paratyphoid, 7; typhoid, 15; measles (excluding rubella), 2154; pneumonia (primary or influenzal), 376; puerperal pyrexia, 154; cerebrospinal fever, 40; poliomyelitis 8; polio-encephalitis, 2; encephalitis lethargica, 3; dysentery, 139; ophthalmia neonatorum, 59. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Aug. 2 was 1040. During the previous week the following cases were admitted: scarlet fever, 39; diphtheria, 17; measles, 27; whooping-cough, 38.

Deaths.—In 126 great towns there were no deaths from scarlet fever, 1 (0) from an enteric fever, 2 (0) from measles, 10 (1) from whooping-cough, 2 (0) from diphtheria, 38 (4) from diarrhœa and enteritis under two years, and 1 (0) from influenza. The figures in parenthesis are those for London itself.

Gloucester reported the fatal case of enteric fever.

The number of stillbirths notified during the week was 222 (corresponding to a rate of 31 per thousand total births), including 14 in London.

Letters to the Editor

DAMAGE TO CERVICAL CORD IN HEAD INJURIES

SIR,—I should like to support Dr. Walshe's plea (*Lancet*, Aug. 5, p. 173) for greater care in the detection of these cases. A few days ago I saw an example in a soldier from the Normandy front. In a quiet moment he dived from a landing craft into water he believed to be deep enough for a swim; it was in fact shallow, and he struck the bottom with his head. He was unable to get out and had to be rescued. Finding it difficult to account for the weakness of his arms the MOs suspected hysteria, and a psychiatrist appeared to confirm this by finding evidences of domestic anxiety; with this diagnosis he was evacuated to England. On examination he showed signs similar to those described by Walshe, including early atrophy of hand muscles and an extensor response in one foot; there was no fracture.

I have seen several similar cases, the essential in all being a sudden flexion or extension of the neck, especially by a fall forward as by tripping over some low object. In none of these cases I have seen has there been a fracture and most have not lost consciousness; there is an immediate though variable loss of power, with numbness and tingling in arms or legs, and later the picture comes to look very like progressive muscular atrophy. An additional point worthy of note is that the posterior columns may be involved. My colleague, Dr. Horsley Drummond, had a patient who sustained such an injury in (of all things) an egg-and-spoon race—bumping head downwards into the man in front—and who presented profound astereognosis in the hands, as well as other signs, from which he has never fully recovered. Indeed my experience of these cases has been unfavourable as regards full recovery of function.

Dr. Walshe refrains from expressing an opinion as to the exact nature of the lesion, but this is generally considered to be a hæmatomyelia. I saw a severe case in a military dispatch rider after a head-on collision. He had a cervical-cord lesion without fracture and without any blood in the cerebrospinal fluid. He died after two or three weeks, having had a paralysed bladder; autopsy revealed a clot, a full inch long, occupying the centre of the lower cervical cord.

It therefore seems probable that hæmorrhage into the cord accounts for the clinical picture. The most deceptive feature is the comparatively slight nature of the trauma, and I am glad Walshe has drawn attention to the injustice which may be done to the patient if the sequence of events is unfamiliar to the doctor.

Newcastle on Tyne. F. J. NATTRASS.

AWAITING SANATORIUM TREATMENT

SIR,—Dr. Franklin does well to point out that a definite relationship between fatness and tuberculosis has not been established, though it must surely be the experience of those engaged in the treatment of tuberculosis that gain in weight and progression toward quiescence or cure of tuberculous lesions in patients under sanatorium treatment do usually, but not necessarily, go hand in hand. The work of Day on the value of increased consumption of sugar and the use of insulin in the treatment of pulmonary tuberculosis stands in contrast to that of Sandler and Berke. The latter recorded (*Amer. Rev. Tuberc.* 1942, **46**, 238) a remarkably favourable response, both clinically and radiologically, in patients with pulmonary tuberculosis to a diet low in carbohydrate and rich in proteins, and this response occurred even in the presence of some loss of weight.

There appears, however, to be a point of theoretical agreement in these diametrically opposed views in regard to dietetic treatment in tuberculosis. Sandler and Berke attribute the beneficial results of their low-carbohydrate high-protein diet to increased glucose-oxygen consumption. They believe that such a diet can bring about normal liver glycogen storage, and that this is necessary for adequate delivery of endogenous glucose to the tissues so that cellular oxidation can be maintained at an optimum level. Perhaps similar factors are operative in Day's high carbohydrate diet with insulin.

Dr. Franklin oversimplifies the waiting-list problem. There is a world of difference between bed rest at home, important though this is, and similar rest under sanatorium conditions. Far too often the disease progresses to a tragic extent during the waiting period. An ideal arrangement from the point of view of a medical superintendent of a tuberculosis institution would be to give priority in admission to all cases likely to respond quickly to treatment. This is, however, impossible in practice and weighty arguments can be offered from the point of view of those concerned with the public health against such a procedure.

The solution of this problem (which is a real headache to all concerned, either clinically or administratively, with making arrangements for the treatment of tuberculous persons) lies in an adequate increase in the number of beds available for treatment. The matter is one of urgency and should be dealt with as such.

Cymla Tuberculosis Hospital, Glam. T. FRANCIS JARMAN.

PART-TIME SPECIALISM

SIR,—Surgeon Vice-Admiral Sir Sheldon Dudley, writing in your issues of July 22 and 29, so exposes himself to attack that it becomes difficult to comment within the limits of a letter. As he very kindly quotes me as an example of the "prejudiced specialist," may I seek the hospitality of your columns to consider some of the Admiral's unique views. I will confine my remarks to the second part of his address.

The greater part of this is devoted to a defence of part-time specialisation which is now discarded by the two Sister Services but apparently still flourishes in the Navy. After ventilating his "emotional prejudice against super-specialism" (really meaning whole-time specialisation), he proceeds to try to convince us that part-time specialism in conjunction with other general work is the ideal. But as his argument proceeds he does not appear to be quite so convinced himself, and at one point wonders if he is really "an anachronism" or "a gerontocrat living in 'the good old times.'" I quote the Admiral himself.

Now it is not really necessary to seek far to discover how this practice of part-time specialism crept into the Navy, and later (for a time) appeared in the embryo RAF Medical Service, which on its creation in 1918 received a large quota of ex-naval medical officers. The answer is found in the published peace-time reports on these two medical services, and I have selected the publications for the year 1935 because I happen to possess these as published by HM Stationery Office that year. I extract the following figures:

	Total force	Operations performed	Anæsthetics given	X-ray examination carried out
Navy ..	86,345	6125	Not stated	Not stated
RAF ..	35,098	3274	1259	5289

I cannot find out what constituted the nature of the 1915 operations in the RAF that did not require anæsthetics, but I hope the patients did not suffer unnecessarily! From the Admiral's address we learn that "the number of naval doctors in peace-time is about 400." This for the year 1935 works out at about 1 doctor for every 216 patients. Not a very large practice, nor perhaps likely to entail much overwork, when dealing with presumably fit fighting men. In fact these figures seem infinitesimal when we think in terms of a National Health Service employing perhaps 60,000 doctors and serving a nation of over 45 million people, of which quite a large proportion constitute cases of serious illness. As to the total operations done in these two Services, and the anæsthetics and X-ray examinations, they could be comfortably dealt with by the staff of a medium-sized hospital. The small matter of 5289 X-ray examinations representing the *total* work of the RAF, at home and abroad, could indeed be disposed of by one radiologist attending the same hospital on three half-sessions per week over the period of one year. It is therefore obvious why neither the Navy, nor the RAF, could ever justify the employment of whole-time specialists—simply because they never had the work to justify it. The figures also explain

why some Service doctors in peace-time complained of lack of full-time employment and a limited experience with the shortage of material available. Further, it is not surprising that these Services did not attract the cream of the medical profession.

It is quite clear that part-time specialism was forced upon the Services, and I suggest to Sir Sheldon Dudley that it is difficult to accept his explanation that it was introduced, and continued, to keep the naval doctor broad-minded. The Army have employed full-time specialists for some time now and they devote their whole time to their specialty. The RAF completed their list of full-time specialists this year by appointing a consultant radiologist group-captain (advocated by me since 1940), and no doubt it is only a matter of time before the Navy falls into line and brings this Service up to date.

Coming to the Admiral's observations about my attitude to the "chaos of administration and misdirection, anomalies," etc., that I experienced while serving as a consultant and specialist in radiology in the RAF, I would remind him that my observations referred to the year 1940, but as far as radiology goes today in the RAF, all my recommendations for reform of that branch of the Service have now been put into force, including mass miniature radiography. Nevertheless, it is evident that the Admiral, even in these enlightened days, still considers it right and proper for a radiologist to act as a "Jack of all trades," sitting as president on medical boards and assessing opinions of his senior medical and surgical colleagues (which in my opinion he has no right to do, not having the necessary experience or skill), administering anæsthetics, and taking his turn performing operations, all in conjunction with his ordinary X-ray duties. Such a suggestion is out of harmony with the advances in medicine, and so ludicrous that I do not propose to spend time arguing it, but I would put one question to the Admiral. Supposing he had to undergo a serious operation, such as prostatectomy or excision of carcinoma of the rectum, whom would he decide to employ? Would he select "the specialist expert surgical craftsman," or one of those unfortunate radiologists on the rota doing his turn at operating which Sir Sheldon Dudley upholds as part of a radiologist's work in the Navy? Note also the Admiral sharply reminds us that such a request would not have to be questioned—whatever the feelings or capabilities of the individual regarding his surgical craftsmanship. In fact it is hinted that, should he refuse, the Gestapo, in the form of King's Regulations, will be employed to restore administrative authority from chaos. Could anything more approach complete Hitlerism in its outlook? Such strict regimentation could never receive favour within the portals of state medicine.

Occasionally the Admiral's scheme for part-time specialism breaks down, as in the case of a certain medical officer, who by no means considered himself a specialist but who asked for a Politzer bag to use in the relief of eustachian obstruction. The request was refused on the grounds that this "operation" was a specialist's job. The medical officer pointed out that he did not consider this very specialised work and drew attention to a trephine included in his issue of surgical instruments. Apparently he was considered competent enough to bore holes in the skull, but not to blow air into a bag to clear the eustachian passage! Officialdom however was not to be convinced, and the patient eventually passed to an EMS hospital for this simple procedure.

A senior officer in charge of a large Service hospital writes me as follows: "We are all enthusiastic amateurs at the job with varying degrees of experience, but I am afraid there is nobody really justified to make a report on anything but the most straightforward film. I feel frankly that it is not only a waste of time and money doing barium meals, etc., without a good radiologist, but it is a dangerous practice from the patient's point of view, and he is quite likely to get the wrong diagnosis and wrong disposal."

Returning to the address, the Admiral, having convinced himself of the superiority of the Naval Medical Service, and indeed stating that "the Navy is at least a century ahead of the shore-going community" in certain aspects of medicine, also upholds the writings of Cade and Conybeare, who believe "that Service patients ... get better medical attention ... than do civilians, even in peacetime." I have already dealt with this quotation in my letter, on "Service Medicine and State Medicine" (*Brit. med. J.* 1944, i, 732), but I must now ask permission to add these further observations about the diagnosis, treatment and disposal of two airmen by this Superservice.

Three months ago one of these men was discharged from the RAF (following a long term of treatment), labelled "psychoneurosis." Through his civilian private doctor he soon reached a specialist voluntary hospital, where a palpable carcinoma was found in the rectum, and the patient awaits operation.

The second patient had various sessions in and out of different RAF hospitals where he received treatment for a supposed gastric ulcer, although more than one X-ray examination never revealed the ulcer. Yet this treatment continued during the year 1941 and part of 1942 on the recommendation of one of the Service medical consultants. Eventually he reached an EMS hospital, where a tentative diagnosis of polyposis intestini was made. At a subsequent examination, which I conducted personally, using St. Mark's Hospital reduction density technique, numerous polypi were demonstrated throughout the large intestine. Sigmoidoscopy also revealed these as far as the pelvic flexure. This patient also awaits operation.

I would not dwell on these two unfortunate errors of diagnosis, nor the futile treatment prescribed in both cases by the medical officers of this much-praised Service, but no doubt here are two more patients who will rejoice that such people as proctologists exist. Yet the Admiral in his light and breezy nautical way almost scornfully brushes aside those who waste their lives in specialism, and in fact associates himself with Aitken (1942) who unkindly refers to proctologists as "wilfully imprisoning their narrow lives within the muddy walls of the rectum." Additional examples of somewhat similar cases could be recorded.

The truth of the matter is that our brother practitioners in uniform are no worse, and no better, as to professional ability than their comrades in civil practice; nor have the former anything better to offer us in the field of diagnosis or treatment. If I had to undergo a serious operation and had to choose whether I preferred this done in a voluntary hospital or in a Service one, there would be no doubt in my mind, and I would go straight for the voluntary hospital.

Finally, I would suggest to the Admiral that he should leave the bridge for a time, where he has become absorbed in the solitude of his bureaucratic specialisation (and not part-time) and return to the quarter-deck where he can again acquaint himself with some of the infuriating irritations that occur to those who have to do the work. I appreciate that on a ship at sea some knowledge of part-time specialism is an advantage, but not ashore, and with the development of the aerial ambulance this amateur specialisation will die. If a state medical service is to be envisaged, it is necessary that those in direction should have a greater sense of understanding of the wishes and aims of those who have to treat the patient; but let us keep amateur specialism out of the picture.

London, W.1. NORMAN P. HENDERSON.

FIXED TRACTION IN A THOMAS

SIR,—Surgeons concerned with the treatment of fractures of the femur will have read with interest Professor Pannett's note on the Thomas splint in your issue of Aug. 5 (p. 180). The method of fixed traction which he advocates, the splint being applied without general anæsthesia, has of course been practised for years. Mr. McCrae Aitken, from considerable experience with this method of treatment, has found that the soothing influence of a cigarette is all that the patient requires for the application of the splint.

Prof. Pannett points out that the pressure of the ring against the tuber ischii can be relieved by attaching a weight of 3–4 lb. over a pulley to the end of the splint. He contends that this does not upset the system of fixed traction. There are, however, some practical difficulties attendant on the use of fixed traction with skin strapping, which upset the accuracy of his calculations. Referring to his diagram, the force P, which is the tension produced in the system by the muscles of the

leg, is not constant. In the early stages it will be high and will greatly exceed the weight of 3–4 lb. (*w*). But as the muscles relax and full length is obtained, the force P will gradually diminish so that after 2–3 weeks it will be unable to resist the force *w*. In addition, the irresistible tendency of the strapping to slip down the leg when traction is applied will assist still further in the reduction of the force P. Despite frequent tightening of the extension cords or tapes under the best conditions of management and splintage, the force P must be subject to considerable variation and although the system when first set up may be one of fixed traction it will quickly be converted into weight or sliding traction.

When there is considerable deformity and shortening of the limb it is frequently impossible to obtain full reduction with the method of fixed traction as described by Prof. Pannett. In these cases sliding or weight traction from a pin or wire is the most satisfactory method of treatment, for it allows rapid reduction in a few hours by a powerful pull. Reduction having been accomplished, the whole purpose of this form of traction has been achieved and the weight can then be considerably reduced. Indeed, if it was convenient and desirable to do so, the pin could be removed and replaced by strapping.

Weight traction with a pin or wire has no bad features if properly used: it has bad features only when badly used. Failure to understand the main purpose of sliding skeletal traction in the treatment of fractures of the femur has led to much confusion of thought and uninformed criticism of an efficient method of treatment.

County Hospital, Orpington. J. S. BATCHELOR.

SIR,—There are two points in Professor Pannett's note of August 5 which should not be allowed to pass without comment.

I feel that one of the main reasons why the Thomas splint with fixed traction has fallen into undeserved disfavour is because (to quote Professor Pannett) "the strapping and splint can be applied with the aid of narcotic drugs alone, without general anæsthesia." Such a dictum from so eminent a teacher is likely to land the inexperienced in serious trouble, and lead him to discard the method without further trial.

If skin traction is to be used at all, it must *never* be used to secure day-to-day extension of an over-riding fracture. Used in this way the chances of failure, in the muscular young adult with a swollen thigh, are far too great. Only too often in this type of case strapping will have to be abandoned for more positive means just at that time when reduction is becoming really difficult. Femurs are usually reduced easily by powerful traction in the first day or two, and the only difficulty in treating this bone is to *keep* the reduced position. Many femurs become almost irreducible after a fortnight, so rapid can be their powers of union. It is important to teach the need for complete reduction within the early days. This should be obtained by manual manipulation under the full relaxation of deep anæsthesia exactly as is done with any other bone in the body. Once having gained full length under anæsthesia, *then* skin traction can hold the length against the returning tone of the unanæsthetised muscles.

The second point which might make Hugh Owen Thomas raise a ghostly eyebrow is the statement that "raising the foot of the bed can be condemned out of hand." I agree that the relief of ring pressure on the tuber ischii can be most accurately secured by weight traction as described. I agree that this in no way upsets the theories of fixed traction. This method has for a long time been advocated by McKee with the added precision and comfort afforded by a Steinmann nail instead of strapping extension. But if the foot of the bed (to which the foot of the splint is firmly secured) be raised only about 6 inches it will be found that the tuber ischii does not slide away from the ring of the splint. If it does, the foot of the bed should be lowered. I would refer Professor Pannett to a working model illustrating this point which I described in *The Lancet* (1944, i, 235).

Despite, however, this somewhat spirited attack, it is obvious that fixed traction in Professor Pannett's experience has been eminently satisfactory, and his article will stimulate the proper interest which the method deserves. I was delighted to see that he, like myself, and despite the critics, had had no difficulty in securing full knee movement.

JOHN CHARNLEY.

DOCTORS AND DEMOCRACY

SIR,—Is not your statement that "doctors in general do not realise how fundamental is the constitutional objection to conferring executive power on non-elected bodies" rather too doctrinaire? There are a dozen or more bodies—e.g., the Medical Research Council, the University Grants Committee, the Radium Commission, Trinity House, the Electricity Commission, the BBC, the Port of London Authority, London Transport, which all have executive power, and none of which is, so far as I know, an elected body. It would seem as if Parliament has consistently preferred to entrust specialist subjects to non-elected bodies, and had foreseen that an elected body would be the worst possible kind for such purposes. Democracy is ill served by those who would rather have it logical than adaptable, for such is the way to tyranny.

London, W.1. RALPH PHILLIPS.

Obituary

F. PERCIVAL MACKIE

C S I, O B E, M D, M S C BRIST., F R C P, F R C S, D P H

THE death on July 17 of Colonel Mackie at the age of 69 removes a well-known name from the list of those who have added fame to the Indian Medical Service. Not only had he a fine record as an active officer in India, but he had seen service in many parts of the world, and had substantial scientific achievements to his credit.

Educated at Cheltenham, Bristol University and St. Bartholomew's Hospital, he entered the IMS in 1902, passing out of Netley, where he studied under Sir Almroth Wright, and obtaining first place with a scholarship in surgery and a gold medal in medicine. Soon after arriving in India he had the good fortune to be attached to the Younghusband expedition to Tibet and entered Lhasa, where his scientific attainments and his knowledge of natural history stood him in good stead. On return in 1905 he became assistant director of the Plague Research Laboratory, Bombay, and was associated with the work of the Indian Plague Commission. There he made what was probably his chief contribution to medicine in the discovery, in 1907, of the transmission of relapsing fever by the body-louse—a discovery that led Nicolle to demonstrate a similar method of conveyance in typhus. In 1908, at the request of the Government of India, he was appointed a member of the Royal Society's sleeping-sickness commission and worked for over two years in Uganda and Kenya on trypanosomiasis and its connexion with the indigenous fauna. Here his familiarity with blood diseases and his sporting proclivities (for he was a good shikari) were valuable assets and he was successful in procuring specimens of big game for investigation. From now on his name appeared in the publications with that of his chief, Sir David Bruce, Lady Bruce and his friend and colleague of the RAMC, Colonel A. E. Hamerton. In 1911 he was employed in special research on kala-azar in Assam.

Thereafter Mackie saw active military service in Baluchistan and during the 1914–18 war in France and Mesopotamia, being mentioned twice in dispatches and receiving the OBE. Returning to India in 1920 he became, successively, director of the Pasteur Institute, Shillong, and in 1923 of the Haffkine Institute, Bombay. There he remained for five busy years and continued to turn out valuable work in association with Hamilton Fairley, mainly on the ætiology and pathology of sprue. In 1928 he was appointed chairman of the plague committee of the League of Nations and officiating public health commissioner to the Government of India, later officiating surgeon-general with the Bombay government. Just before he retired in 1932 he acted once more as director of the Research Laboratory in Shillong. At this time he published, with B. P. B. Naidu, an important paper on the serum therapy of plague (*Lancet*, 1931, ii, 893). Mackie was representative of the Government of India at the Office International d'Hygiène Pub-

lique at Paris in 1919, 1922, 1926, and 1930; president of the tropical diseases section at the centenary meeting of the British Medical Association in July, 1925, and president of the medical and veterinary section of the Indian Science Congress in 1925. In 1933 he joined the staff of the Hospital for Tropical Diseases in London as pathologist and he remained there for five years. During that time he published papers on the pathology of the brain in trypanosomiasis (1935), and with Hamilton Fairley a contribution on a peculiar streptothrical infection hitherto undescribed. In 1937 he surprised his friends by taking, despite his age, the appointment of chief medical officer of the British Overseas Airways Corporation. In this capacity he travelled thousands of miles from one end of Africa to the other, not apparently in any way affected by heat or fatigue, and was able to his great delight to view from the air herds of game in those vast wild regions where, as a young man, he hunted them on foot. His main interest in recent years was in the prevention of yellow fever on aerodromes in Africa and research into the disinsectisation of aircraft.

Mackie was twice married and had three sons, one by his first wife and two by his second wife who survives him.

WALTER KNOWSLEY SIBLEY

M D CAMB., M R C P

Dr. Sibley, who died in London on Aug. 9 at the age of 81, was consulting physician to St. John's Hospital for Diseases of the Skin, where he had for long been director of the electrotherapy department. He was also for eighteen years physician to the old North-West London Hospital. Eldest son of Septimus Sibley, FRCS, he was educated at University College School, London, and Pembroke College, Cambridge, where he obtained double honours in the natural sciences tripos. He qualified from the Middlesex Hospital in 1886 and took his Cambridge degree the following year. To round off these years of preparation he visited the medical schools of Paris, Strasbourg and Berlin, and later he often returned to the Continent, as in 1900 when he read a paper on the treatment of disease by light and heat at the Paris International Congress of Medicine. But his second home at Puys, near Dieppe, has been rudely closed to him in these last years. Sibley's lectureship at the London School of Dermatology and his honorary appointments as treasurer and president of the St. John's Hospital Dermatological Society were closely bound up with his specialty and his hospital, but he also found time to act as deputy chairman to the Medical Sickness and Life Insurance Company. His *Treatment of Diseases of the Skin*, first published in 1912, was a compendium of modern technique and ran into four editions. Sibley married in 1892 Miss Georgina Butlin and they had a son and a daughter.

On Active Service

CASUALTIES

The following casualties have been announced:

DIED

Captain JOHN ANTHONY JAMES SANDILANDS, MB LOND., RAMC

WOUNDED

Surgeon Lieutenant M. J. BROSNAN, MB BELF., RNVR, HM frigate *Blackwood*.
Surgeon Lieutenant W. J. B. ROGERS, BA CAMB., MRCS, RNVR, HM frigate *Lawford*.
Captain J. H. BEILBY, MB CAMB., RAMC
Captain A. P. HANWAY, MB NUI, RAMC
Major P. K. JENKINS, MC, MB BRIST., RAMC
Major E. H. P. LASSEN, MRCS, RAMC
Captain J. H. PATTERSON, RAMC
Captain T. SAVAGE, RAMC
Captain S. D. V. WELLER, MB LOND., RAMC
Lieut.-Colonel G. N. WOOD, MB CAMB., RAMC

AWARD

The following award has been made:

MC

Captain CHARLES SONICK, MB DUBH., IAMC

The telephone number of the NATIONAL HOSPITAL FOR NERVOUS DISEASES, Queen Square, London, W.C.1, has been changed to Terminus 7721.

Notes and News

VOLUNTARY HOSPITALS IN A NATIONAL SERVICE

THE British Hospitals Association has prepared a considered reply to the proposals of the White Paper as a basis of discussion with the Minister of Health and his Scots counterpart. The memo starts from the two fundamental principles that the interests of the patient are paramount and that the patient should at all times have unrestricted freedom of choice of hospital, subject only to the availability and adequacy of the service at the hospital selected. The administrative structure to achieve these ends should comprise a Central Hospitals Board, regional and local hospitals councils. In the bodies charged with planning, the voluntary hospitals should have equal representation with the local authorities, the medical profession being also represented. Management and administration of the hospitals should remain with the individual hospital authorities, whether voluntary or local authority. The area within which the hospital service is to be coördinated and medical consultant service provided should be of sufficient size to make this feasible. It should be determined by considerations relevant to a comprehensive health service; and, except where geographically impossible, should be based upon at least one of the teaching hospitals or centres. Whatever the final form of the plan, it must leave room for and stimulate the impulse of the public to continue voluntary support. All payments from public funds to voluntary hospitals for services rendered under the scheme should be made centrally. Finally, in respect of rebuilding or extensions required under approved regional plans voluntary hospitals should be able to apply to the Government for the whole (or such part as they may require) of the capital expenditure involved, the money to be made available direct from central funds and on the same terms as for the local authorities.

TUBERCULOSIS AND NATIONAL HEALTH SERVICE

The following resolutions have been passed by the Joint Tuberculosis Council:

The tuberculosis officer should have beds under his direct control, preferably in a local general hospital, which would be available for differential diagnosis and assessment of his cases. It would not be in the interests of the adequate institutional treatment of patients that existing sanatorium beds should be divided among the visiting tuberculosis officers as proposed in the white-paper.

The Joint Tuberculosis Council by virtue of its long experience of the problems of tuberculosis should be consulted on any proposed new measures arising out of the white-paper affecting the prevention, diagnosis and treatment of the disease.

The tuberculosis service should be represented by persons nominated by the Joint Tuberculosis Council on the Central Health Services Council which, in the words of the report, "is to be able to express the expert view on any general technical aspect of the service."

Tuberculosis in all its aspects should be treated as one specialty by the tuberculosis service, the senior officers of which should have the status of consultant.

Clinical tuberculosis officers and medical superintendents of tuberculosis institutions should be directly represented on the local health services councils and such representatives should have the right of approach to joint boards and their appropriate committees.

Births, Marriages and Deaths

BIRTHS

BARBER.—On Aug. 9, at Leeds, the wife of Dr. R. O. Barber—a daughter.
BEATTIE.—On Aug. 7, at Edgbaston, Birmingham, the wife of Major P. H. Beattie, RAMC—a daughter.
ELLIOTT.—On Aug. 6, at Aylesbury, the wife of Squadron-Leader J. A. Elliott, GM, MRCS—a daughter.
HACKING.—On Aug. 9, at Cranleigh, the wife of Major E. B. Hacking, RAMC—a daughter.
HARLAND.—On Aug. 7, at York, the wife of Major J. C. Harland, RAMC—a son.
RODEN.—On Aug. 10, at Southsea, the wife of Surgeon Lieutenant W. E. Roden, RNVR—a son.

MARRIAGES

FOSTER-SMITH—HAPPS.—On Aug. 5, at Cringleford, Norwich, Geoffrey Charles Foster-Smith, MRCS, surgeon lieutenant RNVR, to Mary Margaret Happs.
WEST—BARKER.—On Aug. 8, in London, George Philip West, MB, surgeon lieutenant RNVR, to Hylda Maria Barker.

DEATHS

HARRIS.—On Aug. 7, at Horbling, Lincs, Noel Hugh Harris, MRCS, surgeon captain RN ret.
KNIGHTLEY.—On Aug. 11, at Torquay, Walter Randall Knightley, MRCS, aged 75.
SIBLEY.—On Aug. 9, in London, Walter Knowsley Sibley, MA, MD CAMB., MRCP.
SMYLIE.—On Aug. 9, at Blackpool, John Dryden Smylie, MD DUBL.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

TRADE MARK

'SVC'

BRAND

acetarsol vaginal compound

in leucorrhoea

In the treatment of leucorrhoea associated with the presence of *T. vaginalis*, formerly so intractable a condition, 'SVC' brand of acetarsol vaginal compound is frequently effective. The product is available in two forms; tablets of elongated shape for insertion containing grains 4 of acetarsol in each and powder for insufflation containing 12.5 per cent. of acetarsol. In response to a number of requests the volume of the latter preparation has recently been doubled, the total acetarsol content remaining the same. Vaginal insufflations are contra-indicated during pregnancy.

Tablets available in containers of 25 and 100, powder in containers of 6 x 6 Gm.

Manufactured by

MAY & BAKER LTD.

Distributors

PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD., DAGENHAM

7050

"OXOID"

The word "OXOID" is the trade mark of O.X.O. Ltd., and is used in connection with their therapeutical preparations both in tablet and fluid normal form.

ORGANO-THERAPEUTICAL PREPARATIONS

OXO LABORATORY PREPARATIONS

For PERNICIOUS ANÆMIA

OXO LTD'S
LIVER EXTRACT
FOR INJECTION (I.M.)

A highly potent preparation for the treatment of pernicious anæmia.

Dosage in emergency cases is 4 c.c. initial dose, followed by 2 c.c. at three days intervals in the first week and 2 c.c. at weekly intervals subsequently. This will usually raise the blood count to normal in a few weeks.

Maintenance dose: 2 c.c. monthly.

SUPPLIED IN AMPOULES OF 2 c.c. AND BOTTLES OF 10 c.c. AND 20 c.c.

Ampoules: 6 (6/6); 12 (12/6); 50 (48/-); 100 (92/-).
Bottles: 10 c.c. (4/9); 20 c.c. (8/6).

OXO LIMITED, Thames House, London, E.C.4

To MEMBERS of the Scottish Widows' Fund

Just when so many people are increasing their life assurance, it is a trick of fortune that owing to staff shortage we cannot give normal personal attention to members.

Don't wait, however, to be urged to make that addition to your life cover which the times require. Get in touch with us or your agent before you forget this message.

The "W" plan is popular and, in most cases, still covers CIVILIAN WAR RISKS WITHOUT EXTRA CHARGE.

Write to your agent or to the Secretary,

SCOTTISH WIDOWS' FUND

Head Office:
9, St. Andrew Square, Edinburgh, 2

Where BISCUITS *are permissible . . .*

By Appointment to H.M. the King

McVITIE & PRICE LTD · EDINBURGH · LONDON · MANCHESTER

Talk of Enzymes Think of Benger's

Liquor Pancreaticus. Liquor Pepticus. Rennet for Cheese Making. Rennet for Industrial Purposes. (Alcohol Glycerol Extract of Rennet for Whey Feeding of Infants.) Special Junket Powders. Extomak (Desiccated Hog Stomach) Benecol (Mammalian Intestinal Extract in capsule form). Pancreatin Capsules. Pancreatin for Industrial Use. Pepsin. Benger's Food.

BENGER'S LIMITED
HOLMES CHAPEL, CHESHIRE

SULPHONAMIDE THERAPY...
THE REVERSE OF THE MEDAL

With regard to sulphonamide treatment it has been stated that the "serious problem presented by the combination of great therapeutic value with definite toxic hazards must be faced by the profession." However, few toxic effects have been reported thus far following the use of 'Sulfasuxidine' succinylsulphathiazole, a highly effective intestinal bacteriostatic agent developed at the Sharp & Dohme Laboratories.

Less than five per cent of 'Sulfasuxidine' is absorbed from the intestinal tract, renal excretion is rapid, and concentration of the drug in the blood following therapeutic doses is therefore low. 'Sulfasuxidine' succinylsulphathiazole greatly reduces the possibility of peritonitis following intestinal surgery, and when the drug is continued post-operatively, convalescence and the period of hospitalization are often significantly shortened.

Moreover, excellent results have been reported following the use of 'Sulfasuxidine' succinylsulphathiazole in treatment of ulcerative lesions of the bowel and acute, chronic or carrier states of bacillary dysentery.

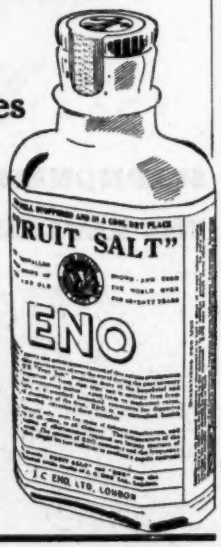
'SULFASUXIDINE' SUCCINYLSULPHATHIAZOLE

Sharp & Dohme Ltd

HODDESDON . . HERTS

ENO'S "FRUIT SALT"

for use with sulphonamides



SINCE it is still regarded as the safer practice during sulphonamide medication to prohibit strong purges and sulphur-containing foods, etc., ENO's "Fruit Salt" remains the aperient of choice. It contains no sulphates and leads to no risk of systemic dehydration. ENO's is partially absorbed into the system and increases the alkalinity of the body fluids. In this way it tends to promote the therapeutic efficacy of the sulphonamide treatment.

J·C·ENO LTD
MEDICAL DEPT
GREAT WEST ROAD
BRENTFORD · MIDDLESEX

DOWN BROS.

LIMITED

SURGICAL INSTRUMENT AND HOSPITAL FURNITURE MANUFACTURERS

•

All Correspondence now to NEW HEAD OFFICE

23, PARK HILL RISE
CROYDON

Telephone: Croydon 6133

•

Showrooms and Fitting Rooms

22a, CAVENDISH SQUARE
LONDON, W.1 MAYfair 0406

"ACADEMIC" SURGICAL STOCKINGS

made with "Lastex" yarn, are being increasingly prescribed by the Medical Profession as a treatment for the relief and prevention of

VARICOSE VEINS

and their allied and associated disorders.

The needs of war place extra strain on all those engaged in industry, civil defence, etc., where standing and walking for unusually long hours is unavoidable. By their constant support "Academic" Stockings delay the onset of fatigue and prevent the ever-present danger of varicose veins and other disorders. They are helpful during and after injection treatment and should be used by expectant mothers as a preventive.

For particulars write to makers:

"ACADEMIC" DEPOT
158–162, Oxford Street, London, W.1

MICROSCOPE OUTFITS WANTED

Highest prices paid. Let us know your requirements if you wish to EXCHANGE as we may be able to help you.

DOLLONDS (L) (Estd. 1750)
35, BROMPTON ROAD, LONDON, S.W.3
Tel.: KENsington 2052

BROOKS Rupture Appliances

are NOT sold in stores in Great Britain

because Brooks know that completely satisfactory results can be only achieved by individual fittings—thus ensuring adequate support with a maximum of comfort. When writing for details please enclose 2d. stamp to conform with Government regulations.

BROOKS Appliance Co., Ltd.
(378) 80, Chancery Lane, LONDON, W.C.2
(378) Hilton Chambers, Hilton St., Stevenson Sq., Manchester, 1.

ALUZYME

The Importance of total VITAMIN B ACTION

It has been pointed out (*Ann. Int. Med.*, 1941, 15, 45-51) that treatment with one factor of the vitamin B complex "may rapidly provoke severe signs of deficiency in another factor." It is therefore advisable, when giving intensive therapy with one factor, to administer the entire vitamin B complex concurrently. ALUZYME is the best available natural source of the entire B complex, supplying all the B vitamins, choline, glutathione and minerals of the living yeast in the native state.

Samples on request. ALUZYME PRODUCTS, Park Royal Rd., N.W.10

MEDICAL CORRESPONDENCE COLLEGE

19, WELBECK STREET, LONDON, W.1

provides

Coaching for all Medical Examinations, D.A., D.P.M., D.O.M.S., D.L.O., D.C.H., M.R.C.P., F.R.C.S., M.D. thesis, and all qualifying examinations by a staff of high qualified Tutors, Honoursmen, and Gold Medallists

No interruption of Postal Courses during the war

Complete Guide to Medical Examinations sent free on application

Applicants should state in which qualification they are interested

---

SPRINGFIELD HOUSE

'Phone: BEDFORD 3417. **Near BEDFORD**

For Mental Cases with or without Certificates.

Ordinary Terms: Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.

Terms moderate. Apply to Resident Medical Superintendent. Telegrams: ADAM WEST MALLING. Telephone No. 2: MALLING.

CALDECOTE HALL

NUNEATON
WARWICKSHIRE
('Phone : Nuneaton 241)

Residential treatment of
"Nervous Disorders" & Alcoholism
(Certifiable cases are not received)

This beautiful mansion situated in the heart of the country (less than two hours from London by L.M.S.R.) and surrounded by charming pleasure grounds in which games and outdoor occupational therapy are available is devoted to the treatment of Alcoholism and "Nerves" by psychotherapeutic and ancillary methods.

Illustrated Brochure and particulars obtainable from A. E. CARVER, M.D., D.P.M., Resident Medical Superintendent.

VALE OF CLWYD SANATORIUM

This Sanatorium is established for the treatment of Tuberculosis of the Lungs and the Pleural Cavities. It is situated in the midst of a large area of park-land at a height of 450 feet above sea-level. Average rainfall 29·57 per annum. Full day and night Nursing Staffs. X-ray plant. Every facility for Artificial Pneumothorax and for operations on the Chest. Electric Lighting. Central Heating.

For particulars apply to Medical Superintendent.

H. MORRISTON DAVIES, M.D., M.Ch. (Cantab.), F.R.C.S., Llanbedr Hall, Ruthin, N. Wales.

THE OLD MANOR, SALISBURY

Telephone: 3216 & 3217

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH

standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

Illustrated Brochure on application to the Medical Superintendent, The Old Manor, Salisbury.

COURT HALL, KENTON, near EXETER

FOR THE TREATMENT OF EIGHT LADIES, VOLUNTARY, TEMPORARY AND CERTIFIED PATIENTS

CLIFFDEN, TEIGNMOUTH

FOR EARLY AND CONVALESCENT CASES Recreational Therapies are held daily by skilled Leaders

The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach. There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 20 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—STARCROSS 259 and TEIGNMOUTH 289

TOR-NA-DEE SANATORIUM

Managing Director: DAVID LAWSON, M.D., F.R.S.E.

FOR THE TREATMENT OF PULMONARY TUBERCULOSIS AND ALLIED DISEASES

Senior Physician and Medical Superintendent: R. Y. KEERS, M.D. (Edin.)

For prospectus apply to The Secretary, Tor-na-Dee, Murtle, Aberdeenshire Telephone: Oults 107

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOGEN, LONDON" *Telephone:* RODNEY 4343 (3 lines)

FOR THE TREATMENT OF MENTAL DISORDERS

Completely detached Villas for mild cases. Voluntary Patients received. Twenty acres of grounds; own garden produce. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actino-therapy, prolonged immersion baths, shock and also modified insulin treatment. Chapel.

Senior Physician, Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are strictly moderate, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON and is 200 ft. above sea-level

PECKHAM HOUSE, 112, Peckham Road, London, S.E.15

Telegrams: "Alleviated, London" Telephone: Rodney 2641-2642

A Private Mental Hospital, for Ladies and Gentlemen suffering from Nervous and Mental Illness, where the amenities of a comfortable home are combined with full investigation and every well-established modern treatment.

Terms from £4.4.0 weekly.

Illustrated Prospectus may be obtained from the Physician Superintendent.

CRICHTON ROYAL, DUMFRIES

FOR NERVOUS AND MENTAL DISORDERS

Cases of Alcoholism and Drug Addiction are admitted. Every facility for individual treatment on the most modern lines. As the Hospital is well endowed, terms are exceptionally moderate.

Medical Certificates given anywhere in the British Isles are valid for admission of patients.

Physician Superintendent: P. K. MCCOWAN, J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law. Tel.: Dumfries 1119.

THE COTSWOLD SANATORIUM

On the Cotswold Hills, seven miles from Cheltenham, Stroud and Gloucester. Fully equipped for the treatment of all forms of Tuberculosis.

Terms: 6 to 10 guineas per week, inclusive.

Full particulars from MEDICAL SUPERINTENDENT, COTSWOLD SANATORIUM, CRANHAM, GLOUCESTER.

Telephone: Witcombe 2181 Telegrams: "Hoffman, Birdlip"

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards

CHISWICK HOUSE,

PINNER, MIDDLESEX.

Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

DOUGLAS MACAULAY, M.D., D.P.M.

ST. ANDREW'S HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

CHEADLE ROYAL

CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES, and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone:* GATLEY 2231

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)

MAGHULL, Near LIVERPOOL

Open Air Occupation and Recreation for Patients, Farming, Gardening, Football, Cricket, Tennis, Bowls, etc. School recognised by Board of Education.

FEES—

1st Class (men only)	from £3	per week
2nd Class (men and women)	37/6	,,
3rd Class (men and women) supported by		
Public Assistance Committees	27/6	,,
Education Committees	33/6	,,
Private	21/-	,,

For further particulars apply to—

C. EDGAR GRISEWOOD, A.C.A., 20, Exchange Street East, LIVERPOOL, 2.

NORTHUMBERLAND HOUSE

Green Lanes, Finsbury Park, N.4

A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Six acres of ground, facing Finsbury Park. Voluntary and Temporary Patients received without certification. E.C.T. Shock therapy, Psychotherapy, and other modern forms of treatment. Air-raid Shelters have been provided. Telephone: STAmford Hill 2688. Telegrams: "Subsidiary, London."

For further particulars apply to the Medical Superintendent, ROBERT M. RIGGALL, Member British Psycho-Analytical Society.

UNIVERSITY EXAMINATION POSTAL INSTITUTION

17, RED LION SQUARE, LONDON, W.C.1

Over 50 years' experience

POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS

MEDICAL PROSPECTUS (24 pages)

sent gratis, along with List of Tutors, &c., on application to the Principal, 17, Red Lion Square, London, W.C.1. (Telephone: HOLborn 6318).

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All forms of treatment available. Fees from 4 gns. per week upwards according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

Apply to Dr. J. A. SMALL. Telephone: Norwich 20080

FENSTANTON

at "FIVE DIAMONDS," Chalfont St. Giles, Bucks

A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 2493.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, October 9th, November 13th, December 4th, 1944. MEDICINE, PATHOLOGY, October 16th, November 20th, December 11th, 1944. MIDWIFERY, October 17th, November 21st, December 12th, 1944. MASTERY of MIDWIFERY EXAMINATIONS, May and November.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

LONDON CHEST HOSPITAL, Victoria Park, E.2. House SURGEON (B2), Male or Female, required on 1st November, with previous surgical experience, preferably thoracic. Salary £150 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent by 16th September to the Secretary.

KING EDWARD MEMORIAL HOSPITAL, Ealing. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A) to Special Departments (Gynæcological, E.N.T., &c., including Anæsthetics), vacant 1st September. 6 months' appointment. Salary at the rate of £150 p.a., with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, should be sent immediately to—

R. A. MICKELWRIGHT, House Governor.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, N.W.8. Applications are invited from registered medical practitioners (Male), including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A), vacant 1st September, 1944. Appointment will be for a period of 6 months. Salary is at the rate of £150 p.a., with full residential emoluments. F. DUDLEY HOBBS, B.A., Secretary.

ROYAL FREE HOSPITAL, Gray's Inn-road, London, W.C.1. Applications are invited from registered medical practitioners for the whole-time appointment of RESIDENT ANÆSTHETIC REGISTRAR (B1) at Three Counties Emergency Hospital' Arlesey, Beds. Applicants must not be more than 10 years qualified. Remuneration from £250 to £550 p.a., according to experience, payable by the E.M.S. Duties to commence 1st October. R practitioners now holding B1 posts and rejected by the R.A.M.C., also suitably qualified R and W practitioners who now hold B2 posts, may apply.

Applications, stating age, qualifications, and accompanied by copies of 3 recent testimonials, should be sent on or before 5th September to: RICHARD T. BARTLEY, Secretary.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Goldhawk-road, Hammersmith, London, W.6. Applications are invited from registered medical practitioners for the following appointments:—

ASSISTANT RESIDENT MEDICAL OFFICER (B1) for 3 months, vacant 1st October, 1944. Applicants should have held house appointments and had obstetric experience. Preference will be given to candidates holding the diploma of F.R.C.S. Salary is at the rate of £80 p.a., with full residential emoluments. On completion of the 3 months the selected applicant will be expected to apply for the post of Senior Resident Medical Officer (B1) also for 3 months. Salary £100 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

DISTRICT RESIDENT MEDICAL OFFICER (B2) for 6 months, vacant 1st October, 1944.. Salary at the rate of £90 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply.

Applications, stating age, qualifications with dates, nationality, previous experience, and accompanied by 1 copy of 3 testimonials, should be sent to the Secretary by the 2nd September.

SEYMOUR LESLIE, Acting Secretary-Superintendent.

EMERGENCY PUBLIC HEALTH LABORATORY SERVICE. There is a vacancy for a recently qualified medical Man to be trained in Public Health Bacteriology and Epidemiology. Applicants should be British and physically fit. The successful candidate will be posted to a provincial laboratory for 2 years, preparatory to being called up for military service as a graded pathologist—deferment in the meantime can be arranged. Beginning salary £350 p.a., with £100 subsistence allowance.

Applications should be made to the Medical Research Council, London School of Hygiene, Keppel-street, London, W.C.1.

THE NELSON HOSPITAL, Merton, S.W.20. Applications are invited from registered medical practitioners, Male, for the appointment of HOUSE SURGEON (A), vacant 1st September, 1944. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise may be extended.

Applications to the Secretary.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, Middlesex. Applications are invited for the post of HOUSE PHYSICIAN AND CASUALTY OFFICER (A). Duties to commence 18th September. Salary £150, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications should be addressed as soon as possible to—

E. H. HURST, Secretary.

WEIR HOSPITAL, Weir-road, Balham, S.W.12. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (B2), vacant now. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent to the Honorary Secretary-Superintendent.

HAMPSTEAD GENERAL HOSPITAL, N.W.3. Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY MEDICAL OFFICER (B2), Out-patient Department, Camden Town, N.W.1, vacant 1st September, tenable for 6 months. Salary £100, plus board, lodging, and laundry, and allowance at £50 p.a. for duties in connexion with First-aid Post established there. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be downgraded temporarily to A. Practitioners qualified for more than 3 months and liable under the National Service Acts (males must be rejected by the R.A.M.C.) may also apply.

Applications on the prescribed form, with copies of 3 testimonials, to be returned not later than 30th August.

KENNETH A. F. MILES, House Governor.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great PORTLAND STREET, W.1. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (B2), duties to commence immediately. Salary at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when appointment will be limited to 6 months. Also practitioners holding B2 posts and ineligible for military service may apply.

Applications should reach the Secretary not later than 28th August.

THE ROYAL CANCER HOSPITAL (FREE) (Incorporated under Royal Charter), Fulham-road, London, S.W.3. Applications are invited for the post of REGISTRAR in the Radiotherapy Department of The Royal Cancer Hospital. Preference will be given to candidates with clinical experience (especially to F.R.C.S. or M.R.C.P.). Facilities will be provided for taking a Diploma in Medical Radiology. Those holding a D.M.R. should not apply. Salary £550 p.a.

Applications, to be made on a form which will be supplied by the Secretary, together with 3 recent testimonials, should be sent to the Secretary by Monday, 21st August, 1944.

THE LONDON HOMŒOPATHIC HOSPITAL (Incorporated by Royal Charter), Great Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners (Male and Female) for the appointment of HOUSE SURGEON (A), vacant 1st September, 1944. The appointment will be for a period of 6 months. Salary is at the rate of £180 p.a., with full residential emoluments. Selected candidates will be required to attend a meeting of the Medical Committee for interview. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications to: L. J. KNOWLES, Secretary.

ST. JOHN'S HOSPITAL, Lewisham, S.E.13. Applications are invited from registered medical practitioners, Male or Female, for the appointments of CASUALTY OFFICER (A) and HOUSE PHYSICIAN (A), now vacant. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for a period of 6 months; otherwise will be for a period of 3 months.

Applications, with copies of testimonials, should be sent as soon as possible to: J. C. GILBERT, Secretary-Superintendent.

ROYAL CANCER HOSPITAL (Free), Fulham-road, LONDON, S.W.3. Applications are invited for the post of JUNIOR ASSISTANT RADIOTHERAPIST (B2). Salary according to experience but will not be less than £450 p.a. Applicants must be registered medical practitioners who hold a diploma in Medical Radiology. The appointment will be for a period of 12 months and subject to renewal, but to R and W practitioners holding A posts who may apply appointment will be limited to 6 months.

Applications to be made on a form which will be supplied by the Secretary, together with copies of 3 recent testimonials, which should be sent to the Secretary by Monday the 11th September.

KING'S COLLEGE, Strand, London, W.C.2. (University of LONDON.) King's College, London, will require in October next the services of a part-time LECTURER IN ANATOMY (3 afternoons a week). Salary £150.

Application should be made to the Secretary, King's College, Strand, W.C.2, on or before 13th September, 1944.

WEST LONDON HOSPITAL, Hammersmith, W.6. House SURGEON (A) required at once. Applications for this post are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts. The appointment will be for a period of 6 months. Salary is at the rate of £100 p.a., with the usual residential emoluments.

Applications, accompanied by copies of 3 recent testimonials and stating age, medical school, qualifications with dates, nationality, and experience, should be sent immediately to—

H. A. MADGE, Secretary.

BELGRAVE HOSPITAL FOR CHILDREN, 1, Clapham-road, London, S.W.9. The Committee of Management invite applications from registered medical practitioners, Male and Female, for the appointment of RESIDENT HOUSE OFFICER (A), vacant now. Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, with copies of testimonials, stating age, should be forwarded as soon as possible to—

THOMAS CLAPHAM, Secretary.

MIDDLESEX COUNTY COUNCIL. Casualty Officer (B1), resident, required at Central Middlesex County Hospital, Park Royal, N.W.10. Applications invited from registered medical practitioners (including R and W practitioners now holding B2 posts). R practitioners holding B1 posts ineligible unless rejected by R.A.M.C. Salary £350 p.a., plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties, such as Council may direct, under supervision of Medical Director. Appointment, subject to medical examination and 1 month's notice, is for 6 months, but may be extended for a further 6 months. Post vacant 5th September, 1944.

Applications, stating age, nationality, qualifications with dates, present post and previous experience, enclosing copies of not more than 3 recent testimonials, to the Medical Director, "B.3," of Hospital immediately. Application forms not provided. C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Assistant Anæsthetist (B2), resident, required at Central Middlesex County Hospital, Park Royal, N.W.10. Applications invited from registered medical practitioners, including R and W practitioners now holding A posts, preferably who have held hospital appointments and had anæsthetic experience. Salary £350 p.a., plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties, such as Council may direct, under supervision of Medical Director. Appointment, subject to medical examination and 1 month's notice, is for 6 months, but may be extended for a further 6 months except in case of R and W practitioners. Post vacant 1st September, 1944.

Applications, stating age, nationality, qualifications, with dates, present post and previous experience, enclosing copies of not more than 3 recent testimonials, to the Medical Director "B3" of Hospital immediately. Application forms not provided. C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

NORTH STAFFORDSHIRE ROYAL INFIRMARY, Stoke-on-TRENT. Applications are invited from registered medical practitioners, Male and Female, for the post of RESIDENT ANÆSTHETIST (B2). Salary is at the rate of £185 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

Applications, stating age and qualifications, with copy testimonials, should be forwarded as soon as possible to the House Governor.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

BARKING EMERGENCY HOSPITAL. Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), now vacant. In addition to hospital duties opportunities for experience will be given by allocation of duties in connexion with the Corporation's public health services outside the Hospital. Salary £200 p.a., together with usual residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise will not exceed 1 year.

Applications, with recent testimonials, immediately to Medical Superintendent, Barking Hospital, Upney-lane, Barking, Essex.

E. R. FARR, Town Clerk.

CITY OF LEICESTER. City General Hospital, Gwendolen-road. Applications are invited from registered medical practitioners, Male and Female, for the following appointments:—

RESIDENT MEDICAL OFFICER (B1) for (mainly) medical duties, vacant in October next. The salary will be £350 p.a., rising to £450 p.a. by £25 p.a. (plus at the present time war-time bonus of £24 14s. p.a.), with full residential emoluments valued at £150 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply. Endorse applications "R.M.O. B1, City General Hospital."

RESIDENT MEDICAL OFFICER (B2), vacant in October next for (mainly) medical duties. The salary is at the rate of £300 p.a. (plus at the present time a war-time bonus of £24 14s. p.a.), with full residential emoluments valued at £150 p.a. R and W practitioners now holding A posts may apply, when the appointment will be limited to 6 months; otherwise it will not exceed 1 year. Endorse applications "R.M.O. B2, City General Hospital."

Applications (on forms supplied), accompanied by copies of 3 recent testimonials, must be submitted as soon as possible and addressed to: E. K. MACDONALD, Medical Officer of Health.

Health Department, Grey Friars, Leicester.

KENT COUNTY COUNCIL. Applications are invited from registered medical practitioners for the temporary appointment of RESIDENT MEDICAL OFFICER (B1) at County Hospital, Farnborough, near Bromley (1000 Beds), to take charge of the Obstetric and Gynæcological Unit of 50 Beds. Applicants must possess a higher qualification in obstetrics and have had obstetrical and gynæcological experience. The successful candidate will be required to undertake the teaching of pupil midwives undergoing Part I of their training. Salary £600–£750 a year by increments of £50, with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, experience, nationality, and the names and addresses of 2 responsible persons to whom reference may be made as to professional ability, to be sent to the County Medical Officer, County Hall, Maidstone, by the 29th August, 1944.

W. L. PLATTS, Esq., Clerk of the County Council.

County Hall, Maidstone, 12th August, 1944.

NORFOLK AND NORWICH HOSPITAL, Norwich. Applications are invited for the post of RESIDENT SURGICAL OFFICER (B1). Salary £300–£400 p.a., according to experience, with full residential emoluments. Preference will be given to candidates holding the F.R.C.S. qualification. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, and experience, accompanied by copies of recent testimonials, should reach the undersigned not later than first post on Tuesday, 5th September.

FRANK INCH, House Governor and Secretary.

GLASGOW ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the post of ASSISTANT RADIOLOGIST (B1) (Full-time). Salary according to experience, with minimum of £500 p.a. Suitably qualified R and W practitioners applying for the post should first obtain permission from the Scottish Central Medical War Committee.

Full particulars may be obtained from the Superintendent, Glasgow Royal Infirmary, 84, Castle-street, Glasgow, C.4.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be sent to: R. MORRISON SMITH, C.A., F.H.A., Secretary and Cashier, Glasgow Royal Infirmary, 135, Buchanan-street, Glasgow, C.1. No canvassing.

ROYAL SUSSEX COUNTY HOSPITAL, Brighton. (375 Beds.) Applications are invited from registered medical practitioners (Male or Female), including practitioners within 3 months of qualification and liable under the National Service Acts, for the post of HOUSE SURGEON (A), vacant at the beginning of October. The salary attached to the post is £175 p.a., with full residential emoluments. To R and W practitioners appointment will be for a period of 6 months; otherwise it will be for a period of at least 6 months.

Applications should be sent to—

L. L. W. LANCASTER-GAYE, Secretary-Superintendent.

ROYAL SUSSEX COUNTY HOSPITAL, Brighton. (375 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of HOUSE PHYSICIAN (B2), vacant middle October. The salary is at the rate of £175 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months; otherwise may be extended.

Applications to: L. L. W. LANCASTER-GAYE, Secretary-Superintendent.

TORBAY HOSPITAL, Torquay. (223 Beds.) The Court of Governors will meet on 22nd September, 1944, to appoint a PATHOLOGIST. Duty to commence on 1st November or earlier. Candidates are required to be registered under the Medical Act. The Pathologist is allowed to engage in private practice and receives a salary of £500 a year, plus 50 % of the private fees received.

Applications (3 copies), accompanied by 3 copies of not more than 3 testimonials, should be received on or before Saturday, 16th September, 1944, by: E. L. GRIST, Secretary.

10th August, 1944.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (255 Beds.) Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of CASUALTY OFFICER (A). The appointment will be for a period of 6 months. Salary is at the rate of £175 p.a., with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent immediately to—

EDWARD L. WIRGMAN, House Governor and Secretary.

ROYAL VICTORIA INFIRMARY, Newcastle upon TYNE. Applications are invited from registered medical practitioners for the open appointment of REGISTRAR ANÆSTHETIST (B1) to the Royal Victoria Infirmary. The appointment will be on a full-time basis, but the successful applicant may be allowed to accept a limited amount of work outside of the Royal Victoria Infirmary by permission of the House Committee. The salary proposed is at the rate of £350 p.a. (non-resident), with £50 additional for the Diploma in Anæsthetics qualification, and the appointment will be for 6 months in the first instance. The appointment is subject to the approval of the Central Medical War Committee.

Applications should be sent as soon as possible to—

A. W. SANDERSON, House Governor.

14th August, 1944.

HULL ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the post of CASUALTY OFFICER (A), vacant now. Duties in the Casualty and Out-patient Department and some ward work. Salary £200 p.a., with full residential emoluments. Candidates may include practitioners within 3 months of qualification and liable under the National Service Acts. To R and W practitioners the appointment will be for a period of 6 months.

Applications should be addressed to—

R. J. CARLESS, House Governor.

THE KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION. SULLY HOSPITAL, SULLY, GLAM. (300 Beds—pulmonary tuberculosis; X-ray Department; Major Thoracic Unit, &c.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of JUNIOR RESIDENT MEDICAL OFFICER (B2). Salary at the rate of £200 p.a. with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise will be for a period of 1 year.

Applications to be sent immediately to—

N. TATTERSALL, Principal Medical Officer.

CAMBORNE-REDRUTH MINERS' AND GENERAL HOSPITAL, REDRUTH. Applications are invited for the post of RESIDENT OBSTETRIC OFFICER (B1) for the Maternity Units maintained by the Cornwall County Council in connexion with the Camborne-Redruth Miners' and General Hospital. Salary £300 a year, with the usual emoluments. The appointment will be subject to termination by 1 month's notice in writing but will ordinarily be for a period of 12 months. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, together with copies of 3 testimonials, should be addressed to: J. C. FIELD, Secretary-Superintendent.

Redruth, July, 1944.

OLDHAM ROYAL INFIRMARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant immediately. The salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, together with copies of 3 recent testimonials, to be submitted to—

F. W. BARNETT, General Superintendent and Secretary.

WEYMOUTH AND DISTRICT HOSPITAL, Weymouth, Dorset. Applications are invited from registered medical practitioners for appointment of HOUSE SURGEON (B2), now vacant. The appointment is open to Male or Female candidates and is for a period of 6 months at a salary of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply.

Applications to be addressed as soon as possible to the Secretary-Superintendent of the Hospital.

VICTORIA HOSPITAL, Accrington. Applications are invited from medical practitioners (Male) for the appointment of HOUSE SURGEON (B2). The salary is at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

Apply, with copies of 2 testimonials, to Hon. Secretary.

WINGFIELD-MORRIS HOSPITAL, Oxford. Applications are invited for the post of ASSISTANT MEDICAL OFFICER (B1) in the Peripheral Nerve Injuries Unit. The work is fairly specialised, but not divorced from the ordinary practice of the Hospital. The appointment is for a period of at least 1 year, and begins immediately. Salary £300 non-resident, or £200 with board and residence.

Applications, together with the names of 3 referees, should be sent as soon as possible to: Professor H. J. SEDDON, Wingfield-Morris Hospital, Oxford.

BURY INFIRMARY, Lancs. (159 Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of CASUALTY AND SPECIALS HOUSE SURGEON (A), now vacant. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for 6 months; otherwise renewable.

Applications, giving full particulars, immediately to—

H. WILKINSON, Superintendent.

ROYAL WEST SUSSEX HOSPITAL, Chichester. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A). Appointment is for 6 months from 10th August, 1944, and includes general surgical, gynæcological, radio-therapy and physio-therapy work. Salary £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, qualifications with dates, and nationality, supported by copies of 3 recent testimonials, should be sent to the House Governor and Secretary.

VICTORIA HOSPITAL, Burnley. (169 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of 2 HOUSE SURGEONS (A) and 1 HOUSE PHYSICIAN (A). Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, with copies of recent testimonials, should be sent immediately to: J. E. WHEATCROFT, Secretary.

ST. ALBANS AND MID HERTS HOSPITAL, Church-crescent, ST. ALBANS, HERTS. (75 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant in September. Salary at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may apply, when the appointment will be limited to 6 months.

Applications, together with copies of testimonials, should be sent immediately to: P. R. BATTISON, Secretary.

NAPSBURY MENTAL HOSPITAL, near St. Albans, Herts. TEMPORARY ASSISTANT MEDICAL OFFICER (B1), Male, wanted. Salary £8 8s. per week, plus war bonus and emoluments of board, lodging, washing, and attendance. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications to the Acting Medical Superintendent.

STOCKPORT INFIRMARY. (159 Beds.) Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A), vacant 28th August. The appointment will be for a period of 6 months. Salary is at the rate of £150 p.a., with full residential emoluments.

Applications, stating age, nationality, qualifications, and previous experience, if any, with copies of not more than 3 testimonials, to be forwarded forthwith to—

H. G. PRICE, Secretary-Superintendent.

THE LEICESTER ROYAL INFIRMARY. (950 Beds.) Resident post vacancies, 1st October, 1944:—

1 ANÆSTHETIST (B2). Salary £150 p.a.
2 HOUSE PHYSICIANS (A). Salary £150 p.a.
1 ORTHOPÆDIC AND FRACTURE HOUSE SURGEON (B2). Salary according to experience.
1 OBSTETRIC HOUSE SURGEON (A), Female. Salary £150 p.a. This vacancy is at the Maternity Hospital, Causeway-lane, administered by the Infirmary.

6 months' appointments. All with full residential emoluments.

B2 posts: R and W practitioners holding A posts may apply.

A posts: Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Appointments will be made on the 13th September.

Applications should be addressed to the House Governor and Secretary on or before 31st August.

9th August, 1944.

CUMBERLAND INFIRMARY, Carlisle. (367 Beds.) Applications are invited from registered medical practitioners for the following posts vacant from 1st October next:—

1 HOUSE SURGEON (B2), including R and W practitioners who now hold A posts.
1 HOUSE SURGEON (A), including practitioners within 3 months of qualification and liable under the National Service Acts.

Appointments will be for a period of 6 months. Salary is at the rate of £160 p.a., with board, &c.

Applications should be sent to the Secretary-Superintendent immediately.

Carlisle, 9th August, 1944.

SHEFFIELD RADIUM CENTRE, at the Royal Infirmary, Sheffield, 6. Applications are invited from registered medical practitioners for the appointment of ASSISTANT RADIOTHERAPIST (B1) at the Sheffield Radium Centre. The salary will be £600, rising to £750 by annual increments of £50, plus a war allowance of £57 4s. and participation in the Centre's Superannuation Scheme. Suitably qualified R and W practitioners who now hold B2 posts, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications should be sent to—

Captain T. W. BARNARD, O.B.E., Secretary.

SOUTHEND-ON-SEA GENERAL HOSPITAL. Applications are invited for the post of MEDICAL REGISTRAR (B1), vacant on or about 16th October. Salary at the rate of £350 p.a., with full residential emoluments. The appointment will be for 1 year. Candidates must have had previous experience in a medical post and preference will be given to those holding a higher medical qualification. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, and experience, accompanied by copies of 3 recent testimonials, to be sent by 2nd September to—

P. H. CONSTABLE, House Governor and Secretary.

KING EDWARD VII HOSPITAL, Windsor. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant at the middle of September. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, with copies of recent testimonials, to be sent by 28th August, 1944, to: G. WESTON, Secretary.

MANCHESTER ROYAL INFIRMARY. Technical Assistant for Clinical Laboratory work (non-resident, Female). The Board of Management of the Manchester Royal Infirmary invite applications for the above post. Applicants should hold a degree in science, or should have had special training in scientific methods of a nature which will qualify them for the work. The duties of the post require attendance daily (Sundays excepted) from 9 A.M. to 5 P.M., Saturdays to 1 P.M., working under the direction of the Director of the Clinical Laboratory. The work comprises routine examinations of blood, basal metabolism, &c. The appointment is for 1 year, renewable for a further period subject to the provision of the bye-laws as to notice, &c., with a commencing salary of £200 p.a., rising by annual increments of £25 to £300 p.a., plus £25 p.a. war bonus.

Applications (stating age), with testimonials, to be sent to—

F. J. CABLE, General Superintendent.

EAST SURREY HOSPITAL, Redhill, Surrey. Applications are invited from registered medical practitioners, Male or Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A), duties to commence 1st September. Salary £150 p.a., with full residential emoluments. To R and W practitioners appointment will be for 6 months only.

Applications to be sent to: E. C. AYLING, Secretary.

EAST SURREY HOSPITAL, Redhill, Surrey. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (B2), vacant 17th October next. Salary at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent to: E. C. AYLING, Secretary.

NUNEATON EMERGENCY HOSPITAL. County of Warwick. Applications are invited from registered practitioners (Male and Female) for the appointment of HOUSE SURGEON (A) at the above Hospital, now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise will not exceed 1 year.

Applications on forms to be obtained from the Public Assistance Officer, Shire Hall, Warwick, and on completion to be returned to him, together with copies of 3 recent testimonials, not later than the 1st September, 1944.

COUNTIES OF DENBIGH, FLINT, AND MONTGOMERY. Applications are invited for the appointment of a SPECIALIST VENEREAL DISEASES OFFICER for the supervision of the V.D. Services in the Counties of Denbigh, Flint, and Montgomery. The officer appointed must have had special experience in the treatment of the diseases and will act under the general directions of the respective County Medical Officers of Health. He will be expected to develop and supervise the "General Practitioner Schemes," to conduct propaganda for the prevention of the disease, and to undertake the several duties appertaining to the appointment as set out in the circulars of the Ministry of Health.

The salary offered is at the rate of £800 p.a. (including bonus), plus a travelling allowance. The appointment is temporary and limited in the first instance for the duration of the war, but may be terminated by 3 calendar months' notice on either side at any time.

Applications, stating age, qualifications, experience, and position in regard to military service, accompanied by copies of 3 recent testimonials, should be sent by not later than the 31st August, 1944, to— J. HARVEY DAVIES,

Clerk to the Flintshire County Council.

County Buildings, Mold, 1st August, 1944.

KEIGHLEY AND DISTRICT VICTORIA HOSPITAL, Yorkshire, WEST RIDING. (146 Beds—2 Residents.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of SECOND RESIDENT MEDICAL OFFICER (A), now vacant. Salary £160 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months; otherwise will be for a period of 6 months renewable. If renewed, salary £180 p.a.

Applications to be received as soon as possible by—

J. YOUNG, Secretary-Superintendent.

THE BURSLEM HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL, High-lane, TUNSTALL, STOKE-ON-TRENT. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (A). Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

C. E. LOWNDES, Secretary.

BERKSHIRE MENTAL HOSPITAL, Wallingford. Applications are invited from registered medical practitioners for the posts of 2 ASSISTANT MEDICAL OFFICERS (B1) at the above Hospital. Commencing salary £390 p.a., plus cost-of-living bonus of £49 8s., together with board, furnished apartments, and laundry valued at £130 p.a. An additional amount of £50 p.a. is payable if in possession of the D.P.M. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply. The above appointments are subject to the provisions of the A.O.S. Act, 1909.

Applications in writing, stating age, qualifications, and previous mental hospital experience, should reach the undersigned by the first post on Wednesday, the 23rd August, 1944.

W. T. MORLAND, Clerk to the Visiting Committee.

33, Bath-street, Abingdon, Berks.

COUNTY BOROUGH OF HUDDERSFIELD. St. Luke's HOSPITAL. Applications are invited for the position of JUNIOR RESIDENT MEDICAL OFFICER (A) at the St. Luke's Hospital, Huddersfield. Salary £230 p.a., plus war bonus, at present £24 14s., in addition to the usual residential emoluments. The position is a superannuated one. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for 6 months; otherwise not exceeding 1 year.

Applications should be forwarded, with a copy of 2 testimonials, to the Medical Officer of Health, Huddersfield.

Town Hall, Huddersfield. SAMUEL PROCTER, Town Clerk.

MANCHESTER ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the appointment of full-time MEDICAL CHIEF ASSISTANT (B1), non-resident, vacant shortly. Applicants must have held house appointments and had medical experience. Preference will be given to candidates holding higher qualifications. Salary is at the rate of £450 p.a. Suitably qualified R and W practitioners holding B2 posts, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications with dates, experience and details of previous appointments, and accompanied by copies of 3 recent testimonials, should be forwarded to the undersigned not later than the 28th August, 1944. By Order, F. J. CABLE, General Superintendent.

THE STAMFORD, RUTLAND AND GENERAL INFIRMARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of 3 recent testimonials, should be sent immediately to the Secretary, H. F. DONALD, The Infirmary, Stamford.

ROTHERHAM HOSPITAL (General Voluntary Hospital —140 Beds.) CASUALTY OFFICER AND ORTHOPÆDIC HOUSE SURGEON (B2), now vacant. Salary £250 to £300 p.a., according to experience, with full residential emoluments. Applications are invited from registered medical practitioners, including R and W practitioners who now hold A posts. To R or W practitioners the appointment will be limited to 6 months.

Applications should be sent at once to—T. H. FLETCHER, Secretary-Superintendent.

ROYAL CORNWALL INFIRMARY, Truro. (330 Beds—5 Residential.) Applications are invited from registered practitioners (Male or Female) for the appointment of HOUSE SURGEON (B2) to the General Surgical and Gynæcological Departments, now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications should be addressed to the Secretary.

ROYAL CORNWALL INFIRMARY, Truro. (330 Beds—5 Residential.) Applications are invited from registered practitioners (Male or Female) for the appointment of ORTHOPÆDIC AND CASUALTY HOUSE SURGEON (B2), vacant 15th September, 1944. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications should be addressed to the Secretary.

ROYAL CORNWALL INFIRMARY, Truro. (351 Beds—5 Residential.) Applications are invited from registered practitioners (Male or Female) for the appointment of HOUSE SURGEON (B2) to the Ophthalmic and Ear, Nose, and Throat Departments (recognised for the D.L.O.) with some general surgical duties. Vacant now. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications should be addressed to the Secretary.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON to Special Departments and CASUALTY OFFICER (A) for duty at the Greenbank Road Section, vacant forthwith. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

ARTHUR R. CASH, General Superintendent.

Head Office: Greenbank-road, Plymouth.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A), vacant forthwith. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

ARTHUR R. CASH, General Superintendent.

Head Office, Greenbank-road, Plymouth.

BIRMINGHAM ACCIDENT HOSPITAL AND REHABILITATION CENTRE. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A) for Burns Unit, vacant 1st September, 1944. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

1st August, 1944. A. A. MACIVER, Secretary.

CITY OF NORWICH. Woodlands Hospital. (311 Beds.) Applications are invited from registered medical practitioners for the appointment of ASSISTANT RESIDENT MEDICAL OFFICER (B2), now vacant. The salary is at the rate of £250 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise to 1 year.

Further particulars of appointment to be obtained from the Senior Medical Officer, Woodlands Hospital, Bowthorpe-road, Norwich, and to whom applications should be sent.

BERNARD D. STOREY, Town Clerk.

City Hall, Norwich.

THE SHEFFIELD RADIUM CENTRE, THE NOTTINGHAM RADIUM CENTRE AND THE NOTTINGHAMSHIRE COUNCIL OF THE BRITISH EMPIRE CANCER CAMPAIGN. Applications are invited for the post of RADIOTHERAPIST to the Nottingham Radium Centre at the General Hospital, Nottingham. Salary according to qualifications and experience, but will not be less than £1200 p.a., with participation in a superannuation scheme. The successful candidate will carry out his work in consultation, and, when necessary, with the assistance of the Medical Director of the Sheffield Radium Centre; he will be appointed an Assistant Medical Director of that National Centre.

Applications should be received by the undersigned immediately, from whom full details concerning the post can be obtained.

HENRY M. STANLEY, House Governor and Secretary.

The General Hospital, Nottingham.

GENERAL HOSPITAL, Nottingham. (712 Beds, including E.M.S. Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of RESIDENT CASUALTY OFFICER (A) for the above Hospital. Duties to commence immediately. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

HENRY M. STANLEY, House Governor and Secretary.

EAST RIDING COUNTY COUNCIL. Beverley Emergency HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant immediately. The salary is at the rate of £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise will be for a period not exceeding 1 year, subject to 1 month's notice on either side.

Applications to be made as soon as possible to—

T. STEPHENSON, Clerk of the Council.

County Hall, Beverley, 31st July, 1944.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Editorial Office Address, 26, Temple Street, Aylesbury, Bucks (Aylesbury 315).
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, August 19, 1944.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

GLOUCESTERSHIRE JOINT BOARD FOR TUBERCULOSIS. (Constituent Authorities: The County Council of Gloucester and the Council of the County Borough of Gloucester.) Appointment of TEMPORARY MEDICAL SUPERINTENDENT AND TUBERCULOSIS MEDICAL OFFICER. The above Board with the approval of the Minister of Health invite applications for the joint appointment of temporary Medical Superintendent at the Standish House Sanatorium, Standish, near Stonehouse, and of Tuberculosis Medical Officer for the County and City of Gloucester.

The person appointed will be in charge of the Standish House Sanatorium, and will be responsible for the treatment of the patients and general management of the Sanatorium. He will have charge of the tuberculosis dispensaries and the general arrangements for the provision of tuberculosis treatment in the County and in the City of Gloucester. The normal accommodation at the Sanatorium is 250 Beds for men, women, and children, and there is an orthopædic block.

The officer appointed will be required to devote the whole of his time to his official duties and must not engage in private practice.

Candidates must possess the qualifications required under Article 111 of the Local Government (Qualifications of Medical Officers and Health Visitors) Regulations, 1930.

The commencing salary will be £1000 p.a. and emoluments, including a house of a total value of £200 p.a. All fees receivable in connexion with the appointments must be paid to the Board.

Travelling and subsistence allowances will be in accordance with the Board's scale.

Staff and office accommodation will be provided.

The appointment is subject to the approval of the Minister of Health, and will be determinable by 3 months' notice in writing on either side and is subject to the provisions of the Local Government Superannuation Act, 1937. The person appointed must satisfactorily pass a medical examination.

Forms of application, to be obtained from the undersigned, should be returned accompanied by copies of 3 recent testimonials and must reach me not later than the first post on Monday, the 4th September, 1944, the envelope to be marked "Medical Superintendent and Tuberculosis Officer."

Canvassing, directly or indirectly, will be a disqualification.

GUY H. DAVIS, Clerk of the Joint Board.

Shire Hall, Gloucester, 14th August, 1944.

ROYAL WEST OF ENGLAND SANATORIUM AND E.M.S. HOSPITAL, WESTON-SUPER-MARE. Applications are invited from registered medical practitioners for the appointment of SURGICAL OFFICER (B1) (Non-Resident), which has become vacant. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Salary is according to experience up to £650 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners how holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of 3 recent testimonials, should be addressed to:—LESLIE J. FURSLAND, Secretary.

BLACKBURN AND EAST LANCASHIRE ROYAL INFIRMARY. (248 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant at present. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent as early as possible to—

T. DEWHURST, General Superintendent and Secretary.

Royal Infirmary, Blackburn.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) Casualty OFFICER (B2) required to commence as soon as possible. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months. Salary at the rate of £200 p.a., with full residential emoluments.

Applications should be sent as soon as possible to—

H. J. JOHNSON, General Superintendent and Secretary.

THE KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION. Applications are invited from registered medical practitioners (Male or Female, single) for the appointment of TEMPORARY ASSISTANT RESIDENT MEDICAL OFFICER (B1) at the Adelina Patti Hospital, Craig-y-nos, Swansea Valley (114 Beds for the treatment of pulmonary tuberculosis in men and women and surgical tuberculosis in children). Applicants should have held house appointments and had institutional experience in the treatment of pulmonary tuberculosis. Salary £350–£25–£450 p.a., plus full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications, and experience, with particulars as to liability for military service and medical fitness, together with copies of 3 recent testimonials, should reach the undersigned immediately.

NORMAN TATTERSALL, Principal Medical Officer.

Memorial Offices, Cathays Park, Cardiff.

PRINCESS ROYAL EMERGENCY HOSPITAL, Swansea. (Swansea COUNTY BOROUGH MENTAL HOSPITAL.) Applications are invited for the temporary post of ASSISTANT MEDICAL OFFICER (B1) for duties in the Emergency Section of the above Hospital. Candidates should have had experience as House Surgeon or House Physician in a general hospital. Salary £400–£25–£450 p.a., with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, experience, &c., together with copies of testimonials, should be sent to the Medical Superintendent as soon as possible.

T. B. BOWEN, Clerk to the Visiting Committee.

BRADFORD ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male, single) for the appointment of HOUSE SURGEON (B2), vacant 1st October. 6 months' appointment. Salary £150 p.a., with full residential emoluments. There are 372 Beds and 8 resident officers. R practitioners who now hold A posts may also apply.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, should be sent immediately to—

H. TRUSSON, House Governor and Secretary.

SOUTHPORT INFIRMARY, Southport. (186 Beds.) Applications are invited from registered medical practitioners for the appointment of SECOND ASSISTANT (TEMPORARY) HONORARY OPHTHALMIC SURGEON. Candidates to reside within 50 miles of Southport.

Applications, stating age and experience, and any special qualifications, to reach the undersigned not later than 31st August, 1944. J. N. A. BRISCOE, Superintendent and Secretary.

MANSFIELD AND DISTRICT GENERAL HOSPITAL, Notts. (189 Beds + 98 E.M.S. Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £220 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications should be sent immediately to—

R. L. WARD, Secretary.

NEWARK TOWN AND DISTRICT HOSPITAL. (70 Normal Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply. Appointment will be for a period of 6 months.

B. C. DION, Secretary-Superintendent.

MINISTRY OF FUEL AND POWER. Applications are invited from registered medical practitioners (Male) for appointment as MINES MEDICAL INSPECTOR in the Midland Region, Birmingham. The post will carry a salary of £1000 p.a., plus a temporary war bonus of £49 11s. p.a. A minimum of 2 years in general practice is essential and professional experience among coal-miners is very desirable. The duties will have mainly to do with occupational diseases and the first-aid and ambulance arrangements at the mines, these involving work underground; and with coördinating and promoting the improvement and fuller use by miners of medical, hospital, and rehabilitation services.

Applications, stating age, qualifications with dates, experience, and nationality, should be sent not later than 2nd September, 1944, to the Establishments Directorate, Ministry of Fuel and Power, 7, Millbank, London, S.W.1.

DEPARTMENT OF HEALTH FOR SCOTLAND. Applications are invited for the appointment of RESIDENT MEDICAL SUPERINTENDENT at Raigmore E.M.S. Hospital of 580 Beds near Inverness at a salary of £900 p.a., with the usual residential emoluments.

Applicants should state age, qualifications, previous appointments, and administrative hospital experience. Applications, with names of 2 persons to whom reference may be made, should be sent to the Department of Health for Scotland, Room 104, St. Andrew's House, Edinburgh, 1, by 22nd August, 1944.

NEW ZEALAND. The Department of Health in New Zealand invite applications for the position of PSYCHIATRIST for the Queen Mary Hospital, Hanmer Springs, New Zealand. Salary £950 p.a. (New Zealand currency), plus free house, fuel, &c., valued at £150 p.a. Free passage and half salary on voyage.

For further particulars apply to High Commissioner for New Zealand, 415, Strand, London, W.C.2, by whom applications will be received until 31st August.

Doctors, Male and Female, required for Locums and Assistantships. Vacancies for Hospital Locums and Ships' Surgeons. Practices and Partnerships for disposal.—Write: A. SHAW, Medical Transfer Agent, Premier Buildings, 88, Church-street, Liverpool.

Lady (exempt) would drive busy Doctor on his morning or afternoon rounds. Times can be arranged. N.W.3, 4 or 11 districts. Small salary.—Box 608, HARRODS ADVERTISING AGENCY, S.W.1.

Experienced Receptionist seeks position with Doctor or Dentist, preferably in county districts of North Bucks, Northants, Bedfordshire, Oxford, Kent, or Sussex.—FRANCES JOHNSON, Chimney Cottage, Appledore Heath, near Ashford, Kent.

Medical Typing undertaken, theses with tables, lectures, &c.: 3s. per 1000 words, carbons 3d. per 1000.—JEPSON, 74a, Alexandra-road, N.W., after 5.30.

Surgery (Dental for 30 years) to Let—equipment available. Also arranged suitable for Doctor.—115, Maida-vale, or ring mornings LAD 1529.

For immediate disposal, General Medical Practice, London (including small panel), conducted on modern evolutionary research lines. No other applicant would be suited. Normal terms; personal introduction recommended.—Address, No. 463, THE LANCET Office, 7, Adam-street, Adelphi, W.C.2.

Practice for Sale. Busy N.W. coastal resort. Panel 1500. Receipts over £4000. Principal specialising. Good house and excellent position. 1½ years' purchase. Address, No. 466, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Microscopes wanted for essential work and war factories; high prices offered. Also Leicas and similar Cameras and "Talkies." Prompt cash.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

May we send specimen of COMPARATOR STETHOSCOPE for clinical trial? (No obligation); see issue of 18-7-42.—Capac Ltd., 2, Ullswater-road, London, S.W.13.

THE NATIONAL MEDICAL AGENCY.

Partnership share large practice, York. Large panel, one year's purchase.

Full details from the NATIONAL MEDICAL AGENCY, 63, Great George-street, Leeds, 1.

THIOURACIL

FOR THE TREATMENT OF THYROTOXICOSIS

The undermentioned manufacturers have arranged for ample supplies of Thiouracil to be made available. They particularly wish, however, to draw attention to the statement made in the course of a recent discussion (British Medical Journal, 24th June, p. 852; Lancet, 1st July, p. 13) that "The treatment was experimental, and patients should not be given this drug except under close, detailed and continual investigation."

LIST PRICES

Bottles of	100	500	1,000
0·2 gm. tablets	6/6	29/–	58/–
0·1 gm. tablets	3/9	15/–	30/–
0·05 gm. tablets	2/6	11/3	22/6

Subject to discount. Purchase Tax extra

THE BRITISH DRUG HOUSES LTD · BURROUGHS WELLCOME & CO · GENATOSAN LTD
IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD · MAY & BAKER LTD
ORGANON LABORATORIES LTD · WARD BLENKINSOP & CO. LTD